UNINCORPORATED YOLO COUNTY

SOURCE REDUCTION AND RECYCLING ELEMENT
FINAL DRAFT

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YOLO COUNTY DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
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The following table outlines and summarizes responses to the comments provided by the CIWMB on the unincorporated county SRRE.

SUMMARY OF RESPONSES TO CIWMB COMMENTS OF APRIL, 1992

COMMENT #	RESPONSE	TEXT CHANGE
5-1	Text addressing qualifications for reduction removed. U.C. Davis numbers incorporated in Table ES-1. Text explaining inclusion of UC Davis information added.	Table ES-1 Section 1.3 Section 1.6
5-2	Goals and objectives discussions and current/future diversion tables modified to include UC Davis data. References added to UC Davis programs.	Table ES-1 Section 4.1 Table 4-1 Table 4-4 Section 5.1 Table 5-1 Table 5-5 Section 6.1 Section 6.2.2 Table 6-6 Section 8.2.2 Table 8-3 Table 10-1 Table 10-2 Appendix C
5-3	Comment addressed by EBA, county's Solid Waste Generation Study consultant.	None
5-4	Emphasis/clarification added to county's approach to source reduction diversion credit.	Section 3.1.1
5-5	Alternatives were grouped into five categories because the evaluation for each alternative within a group is approximately the same.	Section 3.3.1
6-1	Text added on "consequences on the waste". Section 3.4.4 contains a discussion on facility needs (no changes made).	Section 3.4.1.1 Section 3.4.1.2 Section 3.4.1.3

SUMMARY OF RESPONSES TO CIWMB COMMENTS OF APRIL, 1992

COMMENT #	RESPONSE	TEXT CHANGE
6-2	Emphasis/clarification added to county's approach to source reduction diversion credit.	Section 3.4.3
6-3	Section 3.5.1 clearly states the coordinator is responsible for implementing all source reduction programs.	None
6-4	Educational materials will be available to business after this date.	None
6-5	Text added on "consequences to the waste". Section 4.4.5 contains a discussion on facility needs (no changes made).	Section 4.4.1.1 Section 4.4.1.2 Section 4.4.1.3 Section 4.4.1.4
6-6	Explanation added on why it is inappropriate for unincorporated Yolo County to consider changes in zoning/building codes to encourage recycling.	Section 4.3.1
6-7	The county found Waste Board comments to be enlightening and very useful to future markets development. References to CALMAX added to Section 4.4.3 and Section 7.3.1.	Section 4.4.3 Section 7.3.1
7-1	Percentage of waste diversion added as requested.	Table 4-4
8-1	Text added as new section 4.5.3.	New Section 4.5.3
8-2	Technical assistance will continue after these dates.	None
8-3	The Department of Public Works & Transportation is the responsible agency, as stated in Section 4.6.3.	None
8-4	Market development objectives for composting added.	Section 5.1

SUMMARY OF RESPONSES TO CIWMB COMMENTS OF APRIL, 1992

COMMENT #	RESPONSE	TEXT CHANGE
8-5	Text added on "consequences to the waste". Section 5.4.4 contains a discussion on facility needs (no changes made).	Section 5.4.1.1 Section 5.4.1.2
8-6	Clarification text on waste inputs to the composting and anaerobic composting programs was added.	Section 5.3.1.2 Section 5.4.1.1
8-7	The priority waste types for diversion are inerts, tires, triple-raised pesticide containers, and wood. Appropriate text added.	Section 6.1
9-1	Additional text added on diversion of triple-rinsed pesticide containers. All existing diversion credit quantities are described in Section 6.2.2.	Section 6.2.1 Pesticide Containers
9-2	Text updated to state that white goods are landfilled whole without removal of materials. County is actively investigating alternatives however, no environmentally sound alternatives have been identified to date.	Section 6.2.1 White goods
9-3	Text added on "consequences to the waste". Section 6.4.4.1 thru 6.4.4.4 contains a discussion on facility needs (no changes made).	Section 6.4.1.1 Section 6.4.1.2 Section 6.4.1.3 Section 6.4.1.4
9-4	Text added to explain that asphalt alternatives were evaluated together became evaluation for each is approximately the same.	Section 6.3.2
9-5	Text clarified on recovery and disposal of white goods.	Section 6.2.1 White goods Section 6.4.1.3

SUMMARY OF RESPONSES TO CIWMB COMMENTS OF APRIL, 1992

COMMENT #	RESPONSE	TEXT CHANGE
9-6	Text added to explain that alternatives were selected because of their high score and consistency with existing activities at YCCL.	Section 6.4.1.1
9-7	Percentages added as requested.	Table 6-7
9-8	White goods will be landfilled until an environmentally sound, cost-effective alternative can be identified. No cost at this time.	Table 6-10
9-9	Objectives text modified to make them more specific.	Section 7.1
10-1	Household hazardous waste collection day information is included in the county's HHWE.	None
10-2	U.C. Davis disposal figures added to YCCL disposal facility capacity calculations. Projected figures are not available at this time.	Table 8-3
10-3	Historic revenue figures added. The county understands that if the MRF is selected after feasibility assessment, funding of it will need to be included in a SRRE update.	Section 9.1
10-4	Clarification on contingency funding added.	Section 9.3
10-5	Funding availability information added.	Section 10.8
10-6	Tables 10-1 and 10-2 corrected to include U.C. Davis diversion figures.	Table 10-1 Table 10-2

Unincorporated Yolo County
Source Reduction and Recycling Element

Table of Contents

APPENDICES:

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY
YOLO COUNTY SOURCE REDUCTION AND RECYCLING ELEMENT

The Source Reduction and Recycling Element (SRRE) for unincorporated Yolo County analyzes and discusses the set of source reduction, recycling, composting, and special waste activities the county will pursue towards the 25 and 50 percent diversion mandates set out in AB 939. The Element also includes the tasks, schedules, costs, and responsible parties to implement each program. The following summary provides an overview of the programs selected for unincorporated Yolo County and illustrates how the programs add up to achieve the county's waste diversion objectives. Table ES-1 illustrates existing waste diversion levels for each component and anticipated future diversion rates with the implementation of the selected SRRE programs. Table ES-1 includes current and projected waste diversion rates for University of California at Davis (U.C. Davis) programs. Detailed descriptions of current and planned waste management programs for U.C. Davis are provided in Appendix E of the SRRE.

Table ES-1

Existing and Proposed Diversion Rates

for Unincorporated Yolo County (TPY and %)

Program	1990		1995		2000	
	TPY	%	TPY	%	TPY	%
Recycling	58	0.2	486	1.3	3,363	8.2
Composting	0	0.0	440	1.2	1,728	4.2
Special Waste	2,335	6.9	2,990	8.0	3,568	8.7
U.C. Davis Programs (1991)	6,823	20.0	7,901	21.1	1,414	34.3
Transformation*	(44)	(0.3)	(48)	(0.1)	51	0.1
Total	9,216	27.1	11,817	31.6	22,853	55.5

* Not included in total diversion calculation until 2000

Based upon projected diversion levels, unincorporated Yolo County will divert 31.6 percent and 55.5 percent of its total waste stream by 1995 and 2000 respectively.

The programs the county and U.C. Davis will pursue to reach these objectives are listed below.

SOURCE REDUCTION

County government source reduction programs:

- Waste audits - periodic evaluations of waste stream composition and generation rates for county facilities
- Exploration of a waste exchange program - determine interest and feasibility of establishing multi-jurisdictional materials exchange
- In-house source reduction programs - double-sided copying, use of reusable items, forms reduction, and other source reduction efforts

Technical assistance, education, and promotion programs:

- Waste evaluations education/assistance - develop waste audit checklists for businesses and industry
- Backyard composting programs - develop and distribute educational materials to encourage backyard composting
- Technical assistance programs - conduct workshops, seminars, and public demonstrations focusing on source reduction tips and techniques
- Education programs - develop print and electronic media materials to educate county residents of waste reduction efforts and progress

Rate structure modification:

- Stratified disposal rate - further stratify the Yolo County Central Landfill (YCCL) tipping fee schedule to encourage waste minimization, reuse, and recycling

RECYCLING

Source separated recycling:

- Drop-off centers - further promote and develop the Esparto Convenience Center, YCCL, and proposed county park sites

- Office paper recovery - expand the ongoing white office wastepaper (WOW) recycling program to all county facilities; conduct outreach to private sector
- Bin transfer operation - establish a materials recovery and transfer operation at the YCCL site targeting residential self-haulers
- Commercial recycling promotion - provide technical assistance and promote source separated commercial recycling

Mixed waste recycling:

- Materials recovery facility - assess and develop a mixed waste recycling facility, targeting commercial and industrial loads from the county

COMPOSTING

- Yard debris composting - develop an expanded composting program in conjunction with Valley By-Products ongoing operation at YCCL

SPECIAL WASTES

- Construction and demolition debris recovery - source separation of materials; recycle all county project debris; reuse materials for YCCL road base construction
- Tire reuse and recovery program - implement reuse, retread and recycling programs
- White goods recovery program - promote use of bin transfer operation for self-hauled white goods; develop white goods program at Esparto Convenience Center
- Wood debris recovery program - source separation for drop-off at either Esparto Convenience Center, Valley By-Products, or the bin transfer operation

TRANSFORMATION AND LANDFILL DISPOSAL

- Environmentally safe transformation and landfill disposal of wastes at permitted facilities

U.C. DAVIS PROGRAMS

- Bargain Barn
- E-mail system
- Inter-departmental programs
- Food service programs
- Double - sided copying
- Central stores reuse program
- Tire salvaging program
- Campus-wide recycling program
- Manure composting program
- Wood/green waste composting program
- Asphalt/concrete program
- Scrap metal reuse program
- Wood waste program

Through the implementation of these programs, the county will achieve an integrated solid waste reduction and management system that emphasizes the solid waste hierarchy and attains long-term, cost effective waste reduction for unincorporated Yolo County.

SECTION 1

INTRODUCTION

SECTION 1
INTRODUCTION

1.1 PURPOSE OF THE STUDY

Unincorporated Yolo County's Source Reduction and Recycling Element (SRRE) was developed in response to the California Integrated Waste Management Act of 1989, AB 939 (Ch.1095/1989), by Assemblyperson Sher, and to the county's own goal of conserving disposal capacity at its Yolo County Central Landfill (YCCL). The county's SRRE (including U.C. Davis), along with those of Davis, West Sacramento, Woodland, and Winters will be submitted for incorporation into the Countywide Integrated Waste Management Plan (CoIWMP). The CoIWMP, once approved locally, will in turn be submitted to the California Integrated Waste Management Board (CIWMB), in compliance with Public Resources Code 41000.

AB 939 mandates that every city and county in California prepare SRREs and that waste diversion goals of 25 percent by 1995 and 50 percent by 2000 be met at the local level. Emergency regulations were drafted and finally adopted in February 1990 to guide plan preparation. Final regulations were adopted in January 1991. This document has been updated to reflect the changes presented in the final regulations, and recent legislation which also affects this document such as the proposed rural community diversion exemption, allowing cities or counties such as Yolo to seek reductions in their waste diversion mandates.

1.2 PLANNING CONTEXT

Yolo County is located in the Sacramento Valley and is bordered by Sacramento and Sutter Counties to the east, Napa County to the west, Colusa and Lake Counties to the north, and Solano County to the south. A predominantly agricultural area, unincorporated Yolo County covers 989 square miles and has a population of approximately 21,544 people. Population density in the unincorporated county is 21.8 people per square mile. The major land use in unincorporated Yolo County is farmland which accounts for 68 percent of the total acreage. Grazing accounts for another 19 percent, while urban build-up accounts for only 3 percent. The

remainder is dedicated to other uses. The four crops with the highest economic yield for Yolo County are tomatoes, wheat, alfalfa hay, and rice.

The maximum build-out of Yolo County is determined by the Yolo County General Plan. According to county staff, it is likely that the majority of future unincorporated county growth will be in the communities of Knights Landing, Esparto, Madison, and Dunnigan. Ultimately, the county can accommodate only a small percentage of growth due to infrastructure constraints, particularly the lack of water and sewer systems in most rural areas.

Approximately 90 percent (Department of Public Works and Transportation 1991 estimate) of solid waste generated in the unincorporated county is disposed of at the Yolo County Central Landfill (YCCL). The community of Clarksburg hauls their waste to Sacramento County, and Dunnigan solid waste is transported to Colusa County. The Yolo County Central Landfill is located in southeastern Yolo County, at the intersection of County Roads 28H and Road 104. Figure 1-1 illustrates its location. The facility is owned by Yolo County and is operated by the Department of Public Works and Transportation. The Esparto Convenience Center in Esparto services surrounding unincorporated areas including the Capay Valley. Figure 1-1 illustrates its location. Wastes are transferred to the YCCL for disposal. The remaining 10 percent of the county waste stream goes to Colusa County and Sacramento County for disposal.

1.3 INCLUSION OF UNIVERSITY OF CALIFORNIA AT DAVIS (U.C. Davis)

U.C. Davis lies within the boundaries of unincorporated Yolo County. As such, AB 939 requires that U.C. Davis be included in the county's SRRE as a waste generator. However, U.C. Davis owns and operates its own refuse collection system and Class III landfill. All waste generated on campus is handled and disposed of by university personnel. Therefore, U.C. Davis has complete control of its waste stream and assumes full responsibility for solid waste management planning that involves campus generated waste. Given this relationship, the county and university have chosen to develop a stand alone SRRE for U.C. Davis. This document is contained as Appendix E to the county's SRRE. The unincorporated county SRRE integrates all current and projected waste diversion, disposal, and generation figures for U.C. Davis

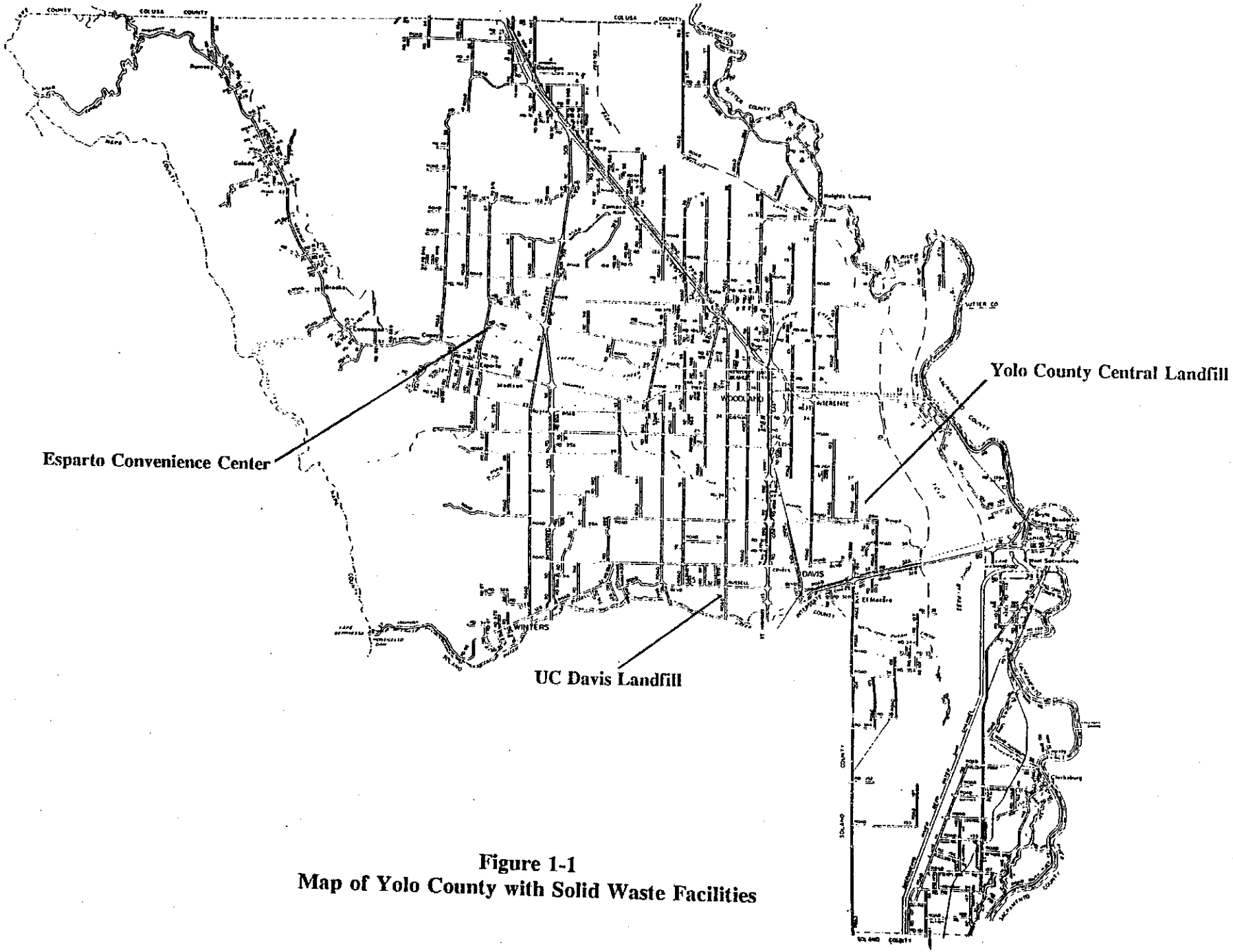

Figure 1-1
Map of Yolo County with Solid Waste Facilities

including the goals and objectives, current and future anticipated diversion tables, disposal facility component calculations, and waste diversion model (Appendix C). Text descriptions of current and future U.C. Davis programs, their implementation, and monitoring and evaluation are only contained in Appendix E.

1.4 EXISTING RECYCLING PROGRAMS

The unincorporated county has established several source reduction and recycling programs that are currently achieving waste diversion. This includes county procurement policies for the purchase of recycled materials, source reduction practices in county offices, office paper recovery for several county facilities, and recycling centers at both the Esparto Convenience Center and YCCL site. A new drop-off center will be established at Cache Creek Canyon Park targeting primarily beverage containers, with two more centers proposed for the Yolo County parks at Knights Landing and Elkhorn. Additionally, the community of Clarksburg in southeastern Yolo County has implemented a curbside collection program.

Existing recycling programs for U.C. Davis are described in Appendix E.

1.5 NEW DIRECTIONS IN YOLO COUNTY INTEGRATED WASTE MANAGEMENT

The unincorporated county has a commitment to integrated waste management as demonstrated by its existing and planned programs. This commitment will need to be deepened and broadened still further to move towards the state mandated waste diversion goals. In preparing the SRRE, the unincorporated county recognizes several broad new directions in its waste management program. These broad trends will be supported by many small actions in implementing Yolo County's integrated waste management program. These new directions include:

- <u>New emphasis on source reduction as the top of the integrated waste management hierarchy</u> - Yolo County will be placing new priority on reducing the amount of waste generated. While these programs and their effectiveness are less well

understood than many recycling programs, the county will be asking its citizens and businesses to participate in new source reduction programs.

- Continued emphasis on source separation over end-use processing - Yolo County is committed to source separation programs as a means to achieve maximum waste diversion while educating the citizens of the county. Every city in Yolo County will be encouraged to achieve the first 25 percent of their diversion through source separation activities.

- Monitoring and evaluation of the county's source reduction, recycling, and composting activities - The county will need to closely watch programs to gauge their effectiveness and to provide feedback to project managers, to county officials, and to the state.

- Cooperation of private sector and residents - Awareness and participation by unincorporated county residents and businesses will be essential to achieving goals.

- New responsibilities by Department of Public Works and Transportation - The department will need to continue to expand existing programs and initiate new ones.

- Support and commitment by the Yolo Board of Supervisors and by the County Department of Public Works and Transportation - Top officials must be prepared to give recommended programs their due consideration and priority.

1.6 STRUCTURE OF REPORT

The unincorporated county's SRRE consists of two parts:

- **Volume 1 Source Reduction and Recycling Element:** includes these required components:

Evaluation Process	Section 2
Source Reduction	Section 3
Recycling	Section 4
Composting	Section 5
Special Waste	Section 6
Education and Public Information	Section 7
Disposal Facility Capacity	Section 8
Funding	Section 9
Integration	Section 10

- **Volume 2 Appendices:** includes the U.C. Davis SRRE and technical analyses and background material in support of Volume 1.

SECTION 2

EVALUATION PROCESS FOR PLAN COMPONENTS

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EVALUATION PROCESS FOR PLAN COMPONENTS

The evaluation of preferred source reduction, recycling, composting, and special waste alternatives for unincorporated Yolo County involved several steps. A set of weighted criteria for evaluation and selection were developed. These selection criteria included factors reflecting the needs and desires of the County and the requirements in Section 18733.3 of the California Code of Regulations (CCR). The criteria were combined with an analysis of each alternative's strengths and weaknesses to arrive at a final set of programs and facilities for Yolo County.

2.1 SELECTION CRITERIA

Thirteen in-depth criteria were developed to encompass important technical, economic, policy, and institutional facets of solid waste reduction and recovery. These 13 criteria reflect local community concerns and priorities, and as well, required selection criteria as delineated by Section 18733.3(a)(1-6) of the CCR. These criteria were presented to the County Waste Advisory Committee (WAC), and each WAC member weighted the criteria according to their relative importance to the County. The averaged values assigned by WAC members provided a policy basis (weighting factor) for determining the relative importance of each criterion in assessing diversion alternatives. The selection criteria, in order of most important to least important, are as follows:

Waste Diversion Potential - Extent to which the alternative reduces the amount of waste requiring disposal at YCCL. Weighting factor = 14.5 points.

Low: Typical waste diversion of 0 to 5 percent.

Medium: Typical waste diversion of 6 to 20 percent.

High: Typical waste diversion of greater than 20 percent.

Operating Experience - Extent to which the alternative has been successfully used in other communities and has demonstrated reliability. Also considers the extent to which the alternative is undergoing rapid technological change. Weighting factor = 10.1 points.

Low: Less than five facilities or programs are employed elsewhere in the country, and/or periods of closure or serious technical failure were reported. Rapid technological change is occurring.

Medium: Five to twenty facilities or programs are employed elsewhere in the country, and/or occasional periods of reduced operation or incidents of technical failure.

High: More than 20 facilities or programs are successfully employed elsewhere in the county, and/or there is a high degree of technical reliability; few periods of reduced operation or technical failure. Technology generally recognized as mature or stable.

Cost Effectiveness - Extent to which the alternative minimizes cost per diverted ton. Considers annual cost of operation over the lifetime of the project. Weighting factor = 9.5 points.

Low: The cost is greater than $100 per diverted ton.

Medium: The cost is between $10 and $100 per diverted ton.

High: The cost is less than $10 per diverted ton.

Environmental Impacts - Extent to which the alternative minimizes environmental impacts or worker hazards to Yolo County: noise; air emissions; leachate; odors; vectors, visual aesthetics. Weighting factor = 8.3 points.

Low: The option has environmental impacts or hazards that are not completely understood, or has a history of chronic environmental nuisance effects on the community such as air pollution, litter, noise, vectors, groundwater contamination, or visual impacts.

Medium: The option has environmental impacts or hazards that are known and controllable; some nuisance effects are evident.

High: There are few or no instances of environmental violations or hazards; little or no nuisance effects. Pollutants can be adequately contained.

Compatibility with Existing Programs in Yolo County - Extent to which the alternative can build upon successful programs and activities already established within the community or at the landfill. Also considers extent to which the alternative requires significant changes in local waste collection, processing and disposal practices. Weighting factor = 8.2 points.

Low: The alternative will require the development of major new facilities or programs in the County. No previous local experience with the alternative exists. Alternative would require significant changes in current local waste collection and disposal practices.

Medium: The alternative will require some new capacity development for an existing program or facility. Some previous local experience with the alternative or a related one. May require some changes in current local waste collection and disposal practices.

High: The alternative can be easily integrated into existing county facilities or programs without large alterations. Significant previous local experience with the alternative. Few or no changes in current local waste collection and disposal practices.

Conformity with State Hierarchy - Extent to which the alternative conforms with the state solid waste management hierarchy. Weighting factor = 7.9 points.

Low: The alternative involves waste transformation.

Medium: The alternative is considered recycling or composting.

High: The alternative reduces waste at the source.

Long-Term Costs of Environmental Impacts - Extent to which the alternative minimizes the long-term costs of any incurred environmental impacts. Weighting factor = 7.4 points.

Low: The alternative has a significant potential for long term corrective action costs to the County due to environmental impacts to air, water, soil.

Medium: The alternative may have the potential for long term corrective action costs to the County due to environmental impacts.

High: The alternative has little or no potential for long term costs due to environmental impacts.

Ease of Implementation - Extent to which the alternative minimizes time/effort required for implementation. Weighting factor = 7.2 points.

Low: Implementation time is greater than three years. Would require significant county staff time to implement.

Medium: Implementation time is one to three years. Some county staff time would be required to implement.

High: Implementation time is less than one year. Little or no county staff time required for implementation.

Adaptability to Changes in County Activities and Needs - Extent to which the option can adapt to and/or incorporate future alternative resource recovery activities and/or needs of Yolo County. Weighting factor = 6.9 points.

Low: The alternative is not readily adaptable because of technological, operational, or institutional limitations or barriers.

Medium: The alternative is adaptable to changes in the waste recovery environment and/or county needs, but may require significant program or facility alteration.

High: The alternative is readily adaptable to changes in the waste recovery environment or county needs without significant program or facility alteration.

Capital Cost - Extent to which the alternative minimizes capital or first-year expenditures. Weighting factor = 6.1 points.

Low: Capital cost greater than $2 million.

Medium: Capital cost between $200,000 and $2 million.

High: Capital cost less than $200,000.

Conformity with Local Markets - Extent to which the alternative is compatible with existing Yolo County and nearby markets. Weighting factor = 5.0 points.

Low: Markets are currently nonexistent in Yolo County or the surrounding area, or are subject to large fluctuations in demand. Potential for long-term development of markets locally.

Medium: Markets exist in Yolo County and/or surrounding areas, however are subject to moderate fluctuations in demand. Potential for short-term development of markets.

High: Local markets are available and relatively stable.

Economic Opportunities for Public/Private Partnership - Extent to which the public sector capital and/or annual costs can be offset through public/private partnership arrangements. Weighting factor = 4.8 points.

Low: Little or no opportunity for public sector costs to be offset through private sector partnership arrangements.

Medium: Moderate opportunity for public sector costs to be offset through private sector partnership arrangements.

High: Large opportunities for public sector costs to be offset through private sector partnership arrangements.

Private Sector Participation - Extent to which the private sector could participate in ownership and operation of the alternative. Weighting factor = 4.1 points.

Low: Typically, there is little or no opportunity for private sector participation.

Medium: Typically, there is moderate opportunity for private sector participation.

High: Typically, there is a large opportunity for private sector participation.

2.2 ALTERNATIVES EVALUATION

Each alternative is examined in terms of the selection criteria. Alternatives are then assigned a value of 1 (low), 2 (medium), or 3 (high) based on the alternative's degree of conformity with each criterion. Next, these values are multiplied by the associated weighting factor for each

criterion, and then summed to obtain a total score for each alternative. Once a total score is calculated for each alternative, alternatives are then listed in numerical order from the highest to lowest total score. This ranking represents the preferred order of reduction and diversion activities based on the selection criteria and state requirements. This figure is balanced by a consideration of each alternative, based on local conformity issues and logical design considerations. The local conformity issues are described in each component section of the plan. Considering selection criteria score, local conformity issues, and logical system design, a final selection of alternatives for the component program is then made. Sections 3 through 6 of this document reflect the use of this method.

It should be noted that programs for U.C. Davis were evaluated and selected based on a modified method, as described in Appendix E.

SECTION 3

SOURCE REDUCTION COMPONENT

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SOURCE REDUCTION COMPONENT

Source reduction differs from recycling, composting, transformation, and disposal in that it focuses on avoiding the creation of waste rather than managing it after it has been generated. It involves changing attitudes and waste-generating behavior through education, and if necessary, through mandatory measures. Source reduction means reusing and repairing rather than replacing; purchasing and using materials that can be recycled; eliminating unnecessary packaging; and choosing nontoxic alternatives.

Source reduction occupies the highest position in California's integrated waste management hierarchy because it reduces costs, conserves energy and resources, and increases national economic competitiveness. The potential of source reduction particularly over the longer term has not yet been realized, at least in part because measuring changes in behavior is difficult and often intangible. To weigh the long-term cost-effectiveness of these techniques may require looking at the alternative: ever-increasing costs and dwindling landfill capacity to manage waste that need not be generated.

3.1 OBJECTIVES

3.1.1 Objectives for Source Reduction

Section 18734.1(a) of the CCR specifies six broad qualitative objectives that must be examined when developing objectives for source reduction. Yolo County included a seventh objective for the unincorporated areas of the county. In addition, U.C. Davis has included two quantifiable objectives.

1. Reducing the use of nonrecyclable materials

2. Replacing disposable with reusable materials and products

3. Reducing packaging

4. Reducing the amount of yard wastes disposed at the Yolo County Central Landfill (YCCL)

5. Purchasing repairable products

6. Making more efficient use of paper, cardboard, glass, metal, and other materials by:

   - reducing wastes from nonresidential generators' production operations, processes, and equipment

   - considering durability, reusability, and recyclability (including whether the recycling of product or material is "closed loop") as product selection criteria

7. Reducing the generation of wastes that contain hazardous or toxic constituents and that pose a potential threat to human health or the environment when placed in the YCCL.

8. U.C. Davis office paper source reduction: The objective is to source reduce 464 tons (1.2 percent) of the total waste stream annually by January 1, 1995, and 490 tons (1.2 percent) by January 1, 2000.

9. U.C. Davis bulky item source reduction: The objective is to source reduce 58 tons (0.2 percent) of the total waste stream annually by January 1, 1995, and 61 tons (0.1 percent) by January 1, 2000.

The county considers increasing source reduction rates for the unincorporated areas to be extremely important and plans to develop and implement new programs. The county will

monitor programmatic efforts in the public and private sectors to ensure that policies and programs are being implemented.

Section 18733.2(a)2) of the CCR requires that the county quantify changes in source reduction each year in the unincorporated areas if it chooses to count any increased level of source reduction toward meeting the diversion goals. A great deal of effort will be necessary if the county is to quantify annual gains in source reduction in the unincorporated areas. This task is very extensive compared to the relatively small contribution source reduction is likely to make in accomplishing mandated diversion goals in the short term. It is the county's belief that the goal of increasing source reduction rates will best be served by focusing first on developing strong public and private-sector programs. Also, the controversy surrounding what can count as source reduction diversion credit and how it should be counted remains unresolved. Given limited financial and staff resources, the county will quantify source reduction rates only at the end of the short-term planning period if deemed necessary by the county. At that time, any identified diversion will be counted toward accomplishing the goals. For these reasons, the county (excluding U.C. Davis) has not established quantifiable estimates of diversion through source reduction for the unincorporated areas or a time frame for achieving each of the objectives previously listed.

3.1.2 Priority Waste Materials for Diversion

Sections 18733.1(b) and 18734.1(b) of the CCR require that the Source Reduction Component identify waste types (waste materials, products, or types of packaging) as priorities for meeting the objectives. At a minimum the following criteria must be used in selecting these waste types:

- Volume of the solid waste
- Weight of the solid waste
- Hazard of the solid waste

- Materials, products, or packages contributing to a waste category or waste type that are made of nonrenewable resources

- The potential to extend the useful life of affected materials, products, or packaging

- Whether the waste type has limited recyclability

On the basis of the solid waste generation data available for Yolo County disposal and diversion, the county has specified waste types for source reduction in the unincorporated areas, the activities required to reduce each waste type, and (in parenthesis) the criterion that each activity addresses:

Paper

- Reuse (volume, extend useful life, ease of reduction)
- Reduced generation of office paper (volume and ease of reduction)
- Reduced use and disposal of paper packaging (volume and ease of reduction)
- Reduced generation of disposable diapers (volume and ease of reduction)

Plastics

- Reduced use and disposal of plastic packaging (volume, nonrenewable, limited recyclability)

Yard Waste

- Reduced disposal (volume and ease of reduction)

Textiles and Leather

- Reuse (volume and ease of reduction)

Special Wastes

- Repair of durable goods (volume, hazard, extend useful life)
- Reduced disposal of auto batteries, tires, white goods (volume, hazard)
- Sale of rechargeable batteries, retreaded tires (hazard, nonrenewable, extend useful life)

Construction and Demolition Wastes

- Reduce demolition wastes (volume, hazard, extend useful life).

3.2 SOURCE REDUCTION PROGRAM EXISTING CONDITIONS

3.2.1 Current Source Reduction Activities

This section discusses existing residential and local government source reduction activities in the unincorporated areas of the county. Appendix E addresses current source reduction activities at U.C. Davis.

Residential Source Reduction Activities

On-Site Composting

Given the rural nature of the county, it is likely that some homeowners in the unincorporated areas compost their yard waste. It is impossible to predict quantity without conducting extensive surveys. However, given the small diversion credit likely applicable through residential yard waste composting, the unincorporated county will not be taking diversion credit, at this point,

for on-site yard waste composting. Instead, the unincorporated county will pursue options for promoting yard waste composting and conduct surveys at the end of the short-term planning period to quantify yard waste composting levels.

Reuse of Materials

Collection of used clothing, furniture, appliances, and housewares by organizations such as the Goodwill and the Salvation Army represents a fraction of material removed for reuse. In 1989, a limited telephone survey of organizations collecting such items was conducted as part of the Yolo County Solid Waste Management Plan. It was found that 750 tons of used clothing and 715 tons of used housewares and appliances are donated for reuse each year. For the purposes of this plan however, the county will not be taking diversion credit for this activity.

Sacramento Mill Supply also offers reuse opportunities to the general public. Located in West Sacramento, they accept scrap textiles and used clothing from the public, and rejected materials from the Goodwill and Salvation Army. Those items that are not suitable for resale in this country are shipped to Third World countries for reuse. The clothing that is not worth shipping is remanufactured into carpets and rags. Sacramento Mill offers up to 6 cents per pound for good reusable clothing.

Local Government Source Reduction

Although most county government offices are located in the City of Woodland, the county offices represent the unincorporated areas of Yolo County. Therefore, local government source reduction activities are addressed within the unincorporated county's Source Reduction and Recycling Element. Although the amount of material that would likely be diverted through an effective source reduction program within Yolo County's own buildings and facilities would be quite small, other benefits would be important such as demonstration of source reduction concepts and activities to the community at large and as a gesture that local government is willing to take a lead role in waste reduction programs.

No formal studies on the source reduction effects of double-sided copying, forms reduction, or other local government source reduction activities have been performed. However, Yolo County does practice double-sided copying and forms reduction as part of normal business. For the future, the county can explore source reduction policies jointly with the City of Woodland. These in-house source reduction policies could then apply to both county and City of Woodland offices.

3.2.2 Quantities Diverted

Although source reduction may not have the diversion potential of recycling, there are many advantages to eliminating rather than managing waste. Diversion goals for source reduction programs vary widely around the country, from one or two percent to as high as 12 percent. However, actual source reduction diversion is difficult to quantify. A recent telephone survey (conducted by the county's consultant) of several active source reduction programs in other parts of the country identified no concrete data about either anticipated or actual diversion rates. The county will not annually quantify source reduction rates for the unincorporated areas until the end of the short-term planning period.

U.C. Davis did not quantify existing source reduction diversion credit. Anticipated future credit for U.C. Davis programs is discussed in Section 3.4.3.

3.2.3 Anticipated Decrease of Source Reduction Activities

The current source reduction activities occurring at the residential, commercial, or local government levels are not anticipated to decrease in the short-term or medium-term planning periods. In fact, new activities to be undertaken in the short-term will serve to boost the level of source reduction in the unincorporated areas of the county.

3.3 EVALUATION OF SOURCE REDUCTION ALTERNATIVES

3.3.1 Description of Alternatives

Section 18734.3 of the regulations requires, at a minimum, an evaluation of 17 source reduction alternatives contained in four broad categories: (1) technical assistance, educational and promotional activities; (2) regulatory programs; (3) rate structure modifications; and (4) economic incentives. For the unincorporated areas, the county has added a fifth category for consideration: local government source reduction programs. (Because of its significance to the county, discussion will begin with this category.) The alternatives were grouped into five categories because the evaluation for each alternative within a group is approximately the same. The following sections describe and evaluate these categories on the basis of the four issues specified in Section 18733.3(b) of the regulations: general description of technique, consistency with local planning, barriers to implementation, and cost. The alternatives are evaluated against locally developed criteria in Section 3.3.2.

3.3.1.1 Local Government Source Reduction Programs

Although most county offices are in the City of Woodland, they act as the local government for the unincorporated county. Therefore, considering local government source reduction programs is appropriate here, although any diversion credit (likely to be quite small, given existing quantification methods) will be more appropriately credited to the city of Woodland in most cases. Although quantification of source reduction is difficult and may not contribute significantly to diversion goals initially, source reduction efforts are considered critical to achieving long-term diversion goals and considered a high priority by the state and the county. Given this, source reduction programs will be treated as a high priority in the planning and implementation phases of the integrated waste management planning process.

General Technology Description. The county could undertake a variety of relatively low-cost in-house options to reduce waste and to set a positive example for the public and for its city governments. On a cumulative basis, such programs could be important because government

agencies are significant users of commodities such as paper. These programs also place the county in a better position to request or require similar efforts from businesses while the county gains experience in developing effective programs. Also, these programs help educate county workers to change their practices as consumers.

Local government source reduction options could include an employee education campaign to encourage in-house and at-home source reduction practices such as using scrap paper and reusing packaging; expanding the use of electronic mail; purchasing machines that offer double-sided copying; using the reverse side of forms; expanding the use of ceramic coffee cups instead of disposable cups; and replacing paper towels with cloth towels. Public Works, Buildings, and Parks projects could use shrubs and ground cover that produce relatively little waste or that are readily composted. As these general waste reduction principals are incorporated into the behavior patterns of individuals in the work place, they will begin to transfer those learned behaviors to other aspects of their daily lives.

Consistency with Local Conditions. These activities are all consistent with the waste reduction objective stated in the Yolo County Solid Waste Management Plan (1989 Revision). The county has begun implementing many of these activities in its offices already.

Institutional Barriers to Implementation. There are few barriers to implementing these measures, other than overcoming ingrained practices. These changes in county procedures must be pursued diligently, with responsibilities within each participating agency clearly assigned and with strong leadership from the top levels of county government.

Cost. The cost of these programs is difficult to assess, although over time costs will not increase substantially. These local government programs in general have very low costs and may well result in long-term savings.

3.3.1.2 Technical Assistance, Education, and Promotion

Section 18734.3(c) of the regulations requires evaluation of five alternatives within this category: waste evaluations (or audits), site of generation composting programs, technical assistance programs, educational efforts, and public recognition.

General Technology Description. This combination of alternatives, with the exception of composting, includes the traditional set of educational and assistance functions that government can provide to promote desired activities. Although the emphasis may vary, each alternative increases awareness of both the need for, and the specific alternatives for, source reduction. Examples of each option's application include the following:

- **Waste evaluations.** Waste evaluations or audits provided by county staff to commercial or industrial businesses at no cost or at low cost can help increase awareness and are the first logical step toward knowing what specific source reduction options a business should pursue. SB 1322 (Ch 1096/89) provides for potential state assistance in conducting waste evaluations. A low-cost activity for the county would be to supply self-audit checklists to businesses.

- **Composting programs.** Site-of-generation composting programs encourage producers of putrescible material to compost on-site, prior to the material entering the waste stream. This type of effort is most broadly applicable to yard wastes, but may also be extended to other organic wastes such as food wastes produced by residences, farms, agricultural operations, and possibly by institutions such as schools and universities. Over time, businesses that grow, process, or package foods or other putrescible organic materials may be a viable target.

- **Technical assistance.** The county could provide technical and informational assistance to unincorporated county businesses and residents by conducting workshops, seminars, and public demonstrations focusing on source reduction. Waste evaluations and subsequent technical assistance, such as setting up procurement programs, can be

provided as a joint service. Under SB 1322 (Ch 1096/89), the California Integrated Waste Management Board may provide technical assistance to municipalities and businesses, including identifying specific waste reduction options for use in the private sector.

- **Education**. Effective use of local newspapers, radio, and TV can help ensure the success of all of the alternatives contained in the technical assistance and promotion category. The county can offer consumer information through a variety of means, including local advertising and bill inserts. Information can cover many aspects of source reduction, such as explaining Yolo County's planning process, by providing tips on shopping practices that promote source reduction (e.g., reuse of containers and packaging, buying in bulk to minimize packaging), and providing residents with the means to remove themselves from junk mail lists. It can encourage (or require) that retail outlets offering plastic packaging also offer paper packaging and that restaurants use reusable materials whenever possible and use paper materials in providing "to-go" services.

  The county could also work with local supermarkets and retail stores to use labeling logos that inform consumers about an item's environmental impact, durability, reusability, and recyclability. By using information and model curricula developed by the state or by public interest organizations, it could implement educational programs at all levels regarding refuse generation and disposal issues in general and source reduction in particular.

- **Public recognition**. Voluntary source reduction activities could be documented and publicly recognized through an awards program. Awards could go to businesses, community organizations, schools, or individuals that contribute to source reduction either through in-house activities or through public outreach and education.

Consistency with Local Conditions. These alternatives are generally consistent with the Yolo County Solid Waste Management Plan (1989 Revision) and to a limited extent are already being

implemented by the Department of Public Works and Transportation. On-site composting may require modifications to the local health code or a health permit.

Institutional Barriers to Implementation. There are few barriers to implementing these alternatives. None of these alternatives results in major alterations in how solid waste is generated, collected, or managed. Site-of-generation composting for the non-residential waste stream may require permits from the County Environmental Health Division of the Health Services Agency.

Cost

- **Local government**. Cost for these programs is relatively low. The salary of a professional to perform waste audits is likely the greatest operating cost. Providing bins for backyard composting programs may involve designing and printing home "how-to" compost guides, which could be distributed at nurseries, lawn and garden shops, and supermarkets. Financial assistance could also be provided to food processors for establishing on-site composting programs. At least a portion of the cost could be met through proceeds from the proposed rate structure modifications.

- **Business**. Local business associations in Yolo County could be encouraged to assist by providing auditors or educational materials, or by providing direct funding. As with local agencies, businesses may experience some increased initial cost, but over the long term, avoided waste management cost should more than compensate for any increases.

3.3.1.3 Regulatory Programs

Section 18734.3(d) of the regulations requires consideration of four alternatives within this category: local procurement ordinances; local land use incentives or disincentives; mandatory source reduction planning and reporting; and local bans on products or packaging.

General Technology Description. The regulatory programs use local legislative powers to mandate specific actions, including ones that may or may not result voluntarily from the other programs described in this section. The advantages of mandated alternatives include the public education that can result from highly visible actions, equal treatment of all parties, higher rates of participation, and minimal use of county funds. The disadvantages include cost of implementation, administration, and enforcement; potential resistance to the measures; and the unknown potential for adversely affecting local commercial activity. Examples of the three alternatives include the following:

- **Local land use incentives or disincentives.** Using land use planning policies is an alternative generally better suited to encouraging recycling than source reduction. One possibility is to encourage the rehabilitation rather than replacement of old structures or require that a certain percentage of materials used to build new structures contain recycled content.

- **Mandatory source reduction planning and reporting.** Yolo County could establish requirements that local commercial and industrial waste generators conduct waste evaluations and develop and implement waste reduction plans. Yolo County could coordinate such a program with the incorporated cities. These plans could outline recycling and waste reduction goals for that business and identify plans to reach those goals (e.g., plans for buying recycled paper, making double-sided copies, reducing purchase of disposables). Such a regulatory requirement could be made effective immediately for new business licensees and be phased in for existing businesses based on renewal dates or on type of business.

- **Local bans on products or packaging.** Section 18734.3(d)(4) of the regulations provides that Yolo County can implement a ban on a product or form of packaging, but only if it determines that the ban will "result in the reduction of waste at the source, rather than substitution by another product or package..." and that the ban results "in a net environmental benefit." Materials difficult to recycle or that are known threats to the environment, including plastics such as polystyrene food

containers and six-pack rings, have been the targets of such bans. There is considerable controversy regarding the effect and cost to affected parties, although they have focused public concern on serious problems and appear to have accelerated changes in corporate manufacturing and marketing practices. Products or forms of packaging that could be targeted by such an ordinance include a variety of plastic packaging that is relatively difficult to recycle, such as those made from mixed resins, or packaging that is deemed to be "excessive" based on some specified criteria.

Consistency with Local Conditions. All the above options, with the exception of bans on products or packaging, are generally consistent with the Yolo County Solid Waste Management Plan (1989 Revision). The plan states that bans on products or packaging are more appropriate to state or national action. The county has not, however, traditionally regulated such areas of business or waste management.

Institutional Barriers to Implementation. Regulations are somewhat more difficult to implement and administer than most of the alternatives previously discussed because they involve high public visibility and potential controversy; they require developing an apparatus to administer and enforce the programs; and they have the potential to reduce commercial or manufacturing activity if businesses perceive regulatory programs as too onerous. Waste reduction planning requirements would probably be the easiest to implement.

Cost. These programs probably entail the most cost to the private sector. Product or packaging bans would probably impose the highest relative cost on the private sector.

3.3.1.4 Rate Structure Modifications

Section 18734.4(a) requires consideration of two alternatives within this category: modifications to local disposal fees and quantity-based local user fees. Consideration of advance disposal fees is added as a third alternative by the county.

General Technology Description. Rate structure modifications require increasing the disposal cost of waste materials to better reflect the true cost of disposal and to encourage reduction, reuse, or recycling. Examples include the following:

- **Advance disposal fees.** Several potential disposal fee modifications include advance disposal fees on the purchase of certain materials, products, packaging, or commodities to more accurately reflect the true cost of that material in the environment.

  The California Integrated Waste Management Board issued a report on advance disposal fees (Disposal Cost Fee Study, Tellus Institute, January 16, 1991) which makes the following salient points: the fundamental principal behind the implementation of an advance disposal fee is that those who use the resources should pay their full cost; the long-term goal of an advance disposal fee is to minimize the total monetary and environmental costs of California's waste management system; and the fee should be levied at the point where the product first acquired characteristics that can be directly relate to increased disposal costs and environmental impact.

  Adoption of an advance disposal fee on a citywide or countywide level could cause significant administrative difficulties and consumers may also choose to buy their goods in jurisdictions which do not have advance disposal fees, resulting in decreased local sales tax revenue. Advance disposal fees may be best administered at the state level where every jurisdiction would be subject to the same fee.

- **Stratified Disposal Rate Schedule.** Stratified disposal rates are already in place at the Yolo County Central Landfill and serve to discourage the disposal of selected materials through higher tipping fees. Bulky wastes such as polystyrene, pallets, household appliances, and tires are differentially priced to discourage disposal and encourage reuse and recycling. Further stratification can work in conjunction with other waste reduction policies to support the overall program. The county has revised

the tipping fee structure and produced a new stratified disposal rate schedule for the YCCL facility which was implemented in January 1992.

- **Quantity-based local user fees.** Refuse collection rates for residences or for commercial and industrial establishments could be restructured by setting a cost for waste collection based on either weight or volume, rather than using a flat assessment. For instance, variable-can rates in which users are charged by the number of containers set out, with each additional container charged at the same or at a higher rate. A provision regarding the number, size, and so on of allowable containers for commercial businesses could be administered through the business licensing process.

Consistency with Local Conditions. These alternatives are not entirely consistent with existing county policy. Regarding variable container rates, the county will need to adopt a policy of municipal control over the flow of waste materials and the franchising or licensing of all private sector collection activities, or obtain voluntary but enforceable agreements from private collectors to use a specified variable rate structure for their customers. Yolo County does not have franchise zones, mandatory pickup, or the population density to justify a variable can rate structure. The nature of an advance disposal fee is such that it would be more appropriately implemented at a state or national level rather than at the local level. Furthermore, these fees are assessed at the manufacturing level and there are no manufacturers in rural Yolo County. Unless fees are evenly distributed across county lines, manufacturers may simply move to those areas where the fees are not charged. Increased disposal fees at the landfill for certain bulky or difficult-to-manage materials, however, would be directly consistent with the desire to maximize the life of the YCCL and has been implemented to an extent already. However, without proper enforcement, a stratified rate schedule may lead to illegal dumping.

Institutional Barriers to Implementation. The potential barriers to implementation vary among the options:

- Advance disposal fees at the point of purchase, in the absence of similar policies in adjacent areas or at the state level, may lead to a decrease in local commercial activity.

- Variable rates for collection in the commercial, residential, and industrial sectors would require some form of flow control or voluntary agreement.

- Using different rates for disposal at the landfill based on the type of material will be limited by the logistical difficulties of identifying materials in mixed compacted waste. This option is most practical for waste materials that tend to arrive already separated by source, such as tires, white goods, wood, and yard waste. Currently Yolo County has differential fees for tires; household appliances; Styrofoam; clean dirt and gravel; clean loads of wood waste; and septic, cannery and similar liquid wastes.

Cost

- **Local government**. The cost to Yolo County of developing and administering these rate modifications is relatively low, with advance disposal fees likely to be most expensive and landfill disposal fee increases likely to be least expensive. The increased fees collected through these disincentives can be used not only to offset the costs of program administration but also to fund source reduction incentives or recycling programs.

- **Consumers and business**. The increased cost imposed on consumers and businesses would vary depending on the level of rate modification implemented.

3.3.1.5 Economic Incentives

Section 18734.3(b) requires consideration of three forms of economic incentives: loans, grants, and loan guarantees; deposits, refunds, and rebates; and reduced business license fees.

General Technology Description. Economic incentives use local revenues and licensing powers to encourage source reduction behavior by reducing the relative cost of a desirable action. In general, and particularly with regard to the private sector, these incentives are used to meet capital or one-time costs rather than operating costs. There are many examples of these incentives' use, including the following.

- **Loans, grants, and loan guarantees.** Low-interest loans or loans guaranteed by Yolo County could assist businesses in making source reduction capital investments, such as the purchase of machines that make double-sided copies or industrial machinery that can use recycled feedstock to make new products. The county could cosponsor such a program with the appropriate entity. The county could also provide grants to local nonprofit organizations for development and promotion of source reduction activities, such as home composting workshops developed by local community-garden organizations. These programs could also be cosponsored with neighboring jurisdictions. Grants or loans could also help to initiate a local or regional waste exchange effort.

- **Deposits, refunds, and rebates.** Deposits that are refundable at the time of replacement can be used to discourage disposing items such as auto or domestic consumer batteries, tires, and white goods. Rebates can be offered when a recycled alternative is purchased, such as a charger for rechargeable batteries or retreaded tires.

- **Business license fees.** License fees or other start-up costs could be reduced for source reduction businesses such as repair shops, second-hand stores, and co-ops that provide consumer education regarding source reduction, or for waste exchanges. Reduced license fees can also be offered to businesses that develop and implement source reduction programs and that offer source reduction information to customers, such as nontoxic alternatives to household hazardous products, and to retail stores that encourage packaging reuse.

Consistency with Local Conditions. Deposits, refunds, and rebates may be more appropriately pursued at the state and federal level, as stated in the Yolo County Solid Waste Management Plan (1989 Revision). The county has not historically offered this type of incentive to local businesses.

Institutional Barriers to Implementation. These incentives vary in their ease of application on a county basis. The likelihood that Yolo County would implement these types of programs is extremely limited due to the lack of funds available for such programs.

- Loans, grants, and loan guarantees are relatively straightforward and can be targeted and administered. Their effects on county revenues, as well as in encouraging source reduction, can be assessed with relative ease. Again, lack of available funds in the county precludes this option at this time.

- Deposits, rebates, and refunds will be somewhat more difficult to administer than loan programs because of the number of retailers involved. The effects on county revenues is somewhat less predictable, but the degree of success can be evaluated relatively easily and the program can be designed to be largely or completely self-supporting. However, the potential exists for litigation by affected manufacturers.

- A reduced business license fee program can be monitored and evaluated with relative ease, but will result in decreased county revenues.

Cost. These programs can be as expensive or as inexpensive as Yolo County dictates. Costs may be shared with the appropriate cities housing the subsidized businesses. Incentives necessarily involve a loss of revenue to the county, with the possible exception of rebates or refunds if the manufacturer is required to, or volunteers to, provide them. Loan or grant programs can be funded to a specified total level on a first-come, first-served basis. Incentives such as loans could be funded at least in part from the proceeds collected from rate structure modification programs.

3.3.2 Evaluation Results

Each of the five categories of source reduction alternatives discussed in Section 3.3.1 is evaluated in a narrative format in Table 3-1. Yolo County's 13 technical, economic, policy and institutional criteria discussed in detail in Section 2 are used here to determine the most appropriate course of action for the county given their stated objectives. The narrative discussion of each alternative as it relates to the selection criteria is then assigned a numerical weight which reflects the feasibility of that alternative in unincorporated Yolo County. This quantitative weighting process is presented in Table 3-2, producing a preferred rank order of diversion alternatives tailored specifically to the needs of unincorporated Yolo County.

Table 3-1
Unincorporated Yolo County
Source Reduction Alternatives Analysis

CRITERIA	Local Government	Technical Assistance and Promotion	Regulatory Programs
1. Waste Diversion Potential	Minimal reduction of total MSW, but may be significant to total waste generated within an agency.	Depending on the program, usually less than 10 percent of household waste or commercial waste for active participants. Backyard composting has substantial potential in 15-25 percent range for some households. As a percentage of the total waste stream, however, waste diversion potential is low.	Rarely more than 5% with current efforts. Potential exists for higher diversion rates, depending on the specific regulations.
2. Environmental Impacts	None	None	None
3. Operating Experience	Hundreds of government office waste reduction programs in the country. Trend is to focus more government attention on source reduction.	Many recycling programs throughout the U.S. provide source reduction technical assistance.	A few local governments have instituted bans on nonrecyclable items, primarily styrofoam.
4. Conformity with Local Markets	Not applicable	Not applicable	Not applicable

Table 3-1 (continued)
Unincorporated Yolo County
Source Reduction Alternatives Analysis

CRITERIA	Local Government	Technical Assistance and Promotion	Regulatory Programs
5. Compatibility with Existing Programs in Yolo County	Most programs are compatible with existing Yolo County programs. However, the Dept. of Public Works and Purchasing Division do not recommend setting a pricing preferential policy for recycled paper.	All programs are compatible with existing Yolo County programs. County governments typically provide public education and technical assistance to businesses on issues of public welfare.	Would require the County to revise its purchasing procedures and pass an ordinance authorizing a price preference for recycled paper. Other regulatory actions may also require new ordinances.
6. Capital Cost	No capital costs. Recycled products, however, may initially cost more.	No capital costs. These programs will require materials costs (ad space, printing, design, etc).	None.
7. Cost Effectiveness	Low initial costs for most programs will be recovered through increased lifespans of products and use of fewer materials.	Costs invested in providing businesses with technical assistance should pay back in terms of long term commercial diversion potential from these activities.	Banning certain materials or products may not be cost effective compared to potential diversion.
8. Long Term Costs of Environmental Impacts	Little or no potential for long term costs due to environmental impacts.	Little or no potential for long term costs due to environmental impacts.	Little or no potential for long term costs due to environmental impacts.

Table 3-1 (continued)
Unincorporated Yolo County
Source Reduction Alternatives Analysis

CRITERIA	Local Government	Technical Assistance and Promotion	Regulatory Programs
9. Economic Opportunities for Public/Private Partnership	Not applicable	Businesses may agree to pay for their own waste audits and trade association members may volunteer to conduct waste audits for other business. Seminars on waste reduction may be paid for by certain businesses.	Not applicable
10. Conformity with State Hierarchy	All programs reduce waste at the source which is consistent with the highest level of hierarchy.	All programs reduce waste at the source which is consistent with the highest level of hierarchy.	All programs reduce waste at the source which is consistent with the highest level of hierarchy.
11. Adaptability to Changes in County Activities and Needs	All programs are fully adaptable to any potential changes in the County's waste recovery environment.	All programs are fully adaptable to any potential changes in the County's waste recovery environment.	All programs are fully adaptable to any potential changes in the County's waste recovery environment.
12. Ease of Implementation	Relatively easy to implement, 6 months or less for most operational modifications. Requires in-house management and coordination responsibilities.	Implementation time less than one year to establish program, ongoing implementation. Will require staff time to recruit businesses for waste audits and conduct the audits.	Regulations affecting businesses are subject to opposition. May take up to one year to draft, introduce and adopt appropriate ordinances.

Table 3-1 (continued)
Unincorporated Yolo County
Source Reduction Alternatives Analysis

CRITERIA	Local Government	Technical Assistance and Promotion	Regulatory Programs
13. Private Sector Participation	Public procurement policy can aid private market development of recycled products and help support businesses selling recycled products.	Trade associations can participate by training their members to conduct waste audits; Non-profit garden groups may provide technical assistance to residents on home composting. Businesses may agree to pay for a waste audit.	Private sector compliance necessary for certain legislation.

Table 3-1 (continued)
Unincorporated Yolo County
Source Reduction Alternatives Analysis

CRITERIA	Rate Structure Modification	Economic Incentives
1. Waste Diversion Potential	Programs tend to decrease waste volume. Variable can rates, however, may lead to an increase in weight as some residents may compact trash into a smaller can.	Difficult to monitor actual diversion, although likely to be low.
2. Environmental Impacts	Can lead to increases in illegal dumping.	None
3. Operating Experience	Variable can rates have been successfully implemented in several urban areas. Bulky item surcharges operating in many communities.	Use of grants and loans are more commonly targeted toward recycling. A few communities, however, are starting to provide grants/loans for organizations to provide home composting technical assistance.
4. Conformity with Local Markets	Not applicable	Not applicable
5. Compatibility with Existing Programs in Yolo County	Increased disposal fees are consistent with local conditions because Yolo County already has some special rate structures in place at the landfill, e.g. for bulky items and styrofoam. Variable can rates, however, may require some control over garbage collection rates which doesn't currently exist.	The County does not currently offer any economic incentives for source reduction programs and does not plan to offer grants/loans for source reduction businesses/programs. The County will pursue non-economic incentives for promoting source reduction.

Table 3-1 (continued)
Unincorporated Yolo County
Source Reduction Alternatives Analysis

CRITERIA	Rate Structure Modifications	Economic Incentives
6. Capital Cost	None	No capital costs. Costs would be entailed, however, to the extent that grants and loans were offered.
7. Cost Effectiveness	Considered very cost effective. Increased disposal fees can pay for program administration. Half can rates may decrease residential revenues somewhat.	Not considered very cost effective overall because of the limited audience affected by grants and loans. This may work better to serve as an example to other businesses what levels of source reduction can be accomplished than as a waste diversion tool.
8. Long Term Costs of Environmental Impacts	None	None
9. Economic Opportunities for Public/Private Partnership	Private haulers may help establish new rates to encourage source reduction.	Lending institutions may be willing to provide low interest loans to businesses buying or making recycled products.
10. Conformity with State Hierarchy	Consistent with highest level of hierarchy	Consistent with highest level of hierarchy.
11. Adaptability to Changes in County Activities and Needs	All programs are fully adaptable to potential changes in the county's waste recovery environment.	All recommended programs are fully adaptable to potential changes in the county's waste recovery environment.

Table 3-1 (continued)
Unincorporated Yolo County
Source Reduction Alternatives Analysis

CRITERIA	Rate Structure Modifications	Economic Incentives
12. Ease of Implementation	Relatively easy to implement, once new rates are determined. Cooperation with private haulers necessary.	May meet private sector opposition.
13. Private Sector Participation	Private haulers would be directly involved in changing rates to encourage source reduction for residential and commercial customers.	Loans and grants may encourage the private sector to engage in additional source reduction activities.

Table 3-2
Source Reduction Diversion Alternatives Weighted Score
for Unincorporated Yolo County

Criteria	Weighting Factor	Local Government		Tech. Assistance/ Promotional		Regulatory Programs		Rate Structure Modifications		Economic Incentives	
1. Waste Diversion Potential	14.5	1	14.5	1	14.5	1	14.5	2	29.0	1	14.5
2. Environmental Impacts	8.3	3	24.9	3	24.9	3	24.9	3	24.9	3	24.9
3. Operating Experience	10.1	3	30.3	3	30.3	3	30.3	2	20.2	1	10.1
4. Conformity with Local Markets	5.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0
5. Compatibility with Existing Programs in Yolo County	8.2	2	16.4	3	24.6	1	8.2	2	16.4	1	8.2
6. Capital Costs	6.1	3	18.3	3	18.3	3	18.3	3	18.3	3	18.3
7. Cost Effectiveness	9.5	2	19.0	2	19.0	2	19.0	3	28.5	1	9.5
8. Long-Term Costs of Environmental Impacts	7.4	3	22.2	3	22.2	3	22.2	3	22.2	3	22.2
9. Economic Opportunities for Public/Private Partnership	4.8	1	4.8	2	9.6	1	4.8	2	9.6	2	9.6
10. Conformity with State Hierarchy	7.9	3	23.7	3	23.7	3	23.7	3	23.7	3	23.7
11. Adaptability to Changes	6.9	3	20.7	3	20.7	3	20.7	3	20.7	3	20.7
12. Ease of Implementation	7.2	3	21.6	3	21.6	2	14.4	2	14.4	1	7.2
13. Private Sector Participation	4.1	1	4.1	3	12.3	3	12.3	3	12.3	3	12.3
Weighted Score			220.5		241.7		213.3		240.2		181.2
Adjusted Score			232.1		254.4		224.5		252.8		190.7
Rank			3		1		4		2		5

3.4 SOURCE REDUCTION PROGRAM SELECTION

3.4.1 Identification and Justification of Selections

The evaluation of source reduction options in Section 3.3.1 examined the full range of programs that have been considered or actually implemented across the country. A number of alternatives, such as inducing changes in the way packaging is designed or in the durability of manufactured goods, are less likely to be effective at the local level. The overriding factors in selecting programs for the unincorporated areas of Yolo County are the probable effectiveness of specific alternatives based on the above evaluation, the data developed in the Solid Waste Generation Study, and the appropriate time frames for implementation.

Yolo County has selected and plans to implement source reduction program alternatives from three of the alternative categories. The program selection and implementation process is structured so that the full range of waste generating sectors will be included. The implementation of the selected programs flows logically, with the initial emphasis on technical assistance measures that achieve public outreach, followed by rate structure modification and local government programs. The following paragraphs provide the justification for selecting the general set of alternatives within each of the three categories, which are discussed in the same order as the order of priority assigned them in Sections 3.3.2.

Appendix E contains a discussion of selected source reduction programs for U.C. Davis.

3.4.1.1 Technical Assistance, Education, and Promotion

This category of potential programs was selected, as discussed in Section 3.3.2, as the highest priority program for implementation within the area of source reduction. The county has selected a broad range of source reduction technical assistance, education, and promotion alternatives evaluated in Section 3.3.1 for implementation during the short-term planning period (1991 through 1995). The selected alternatives include: waste evaluations (or audits), site-of-generation composting programs, and educational efforts. These specific alternatives have the potential to

address all of the objectives outlined for this component in Section 3.1.1. These programs also scored very high when ranked against the county's 13 criteria, particularly those for cost effectiveness, ease of implementation, and adaptability to social conditions. These programs consequence to the waste stream will be a net reduction in waste generation and a shift of waste types to more desirable and reusable goods.

Specific programs selected by Yolo County are:

- **Waste Evaluations**

  The county will develop and circulate waste audit checklists and provide waste evaluation assistance to commercial and industrial businesses throughout the unincorporated county. The county will also work with the cities to coordinate the effort on a countywide basis.

- **Composting Programs**

  The county will develop and distribute educational and informational materials to encourage site-of-generation composting by residents. Target materials will include yard and food wastes. The county will also assess the potential for developing/expanding site-of generation composting within the county's agricultural and food processing businesses.

- **Technical Assistance**

  The county will provide technical and informational assistance to businesses and residents by conducting workshops, seminars, and public demonstrations focusing on source reduction tips and practices at home and work. Businesses will also be encouraged to participate in organizing workshops. The county will also assist local agencies and the private sector in identifying appropriate state and federal level grants, loans, and subsidies.

The county will determine what funding or other assistance may be available from the CIWMB pursuant to SB 1322 (Ch 1096/89) to assist in the implementation of these activities.

In conjunction with cities of Yolo County, the county will contact adjacent counties to explore and negotiate shared grant funding for establishing a regional waste exchange. This exchange can be linked to that already developed at the state level.

- **Education**

As part of the broader education and information campaign (discussed in Section 7.0), the county will develop a print and electronic media program to publicize all of the county's technical assistance efforts. For source reduction, this will include consumer information dissemination using a variety of means, including local advertising, bill inserts, etc.

The county will also coordinate with area schools to identify projects and events to teach source reduction concepts in schools.

The county will also encourage and assist employers in providing information to workers regarding source reduction at work and home.

3.4.1.2 Rate Structure Modifications

This category of potential programs was selected, as discussed in Section 3.3.2, as the second highest priority program for implementation within the area of source reduction. The alternatives in general meet the objectives detailed in Section 3.1.1. The category also scored well in the areas of cost effectiveness, waste diversion potential, and environmental impacts. The county has selected one specific option within the three alternatives (advanced disposal fees, stratified disposal fees, and quantity-based user fees) evaluated in Section 3.3.1 for implementation during the short-term (1991 through 1995) planning period. This program's consequence to the waste

stream will be a net reduction in waste disposal, particularly for targeted special wastes, and shift to recovery of targeted wastes. Little change in net generation is anticipated. The program selected for implementation by the county is:

- **Stratified Disposal Rate Schedule**

  The county will review the Yolo County Central Landfill disposal rate schedule and implement general increases as necessary to fund new programs and encourage waste reduction behavior. Particular emphasis will be placed on expanding differential increases for the difficult-to-manage, bulky, and other materials deemed inappropriate for disposal at YCCL. A disposal rate schedule was implemented in October 1992. This disposal rate schedule is provided in Appendix A.

3.4.1.3 Local Government Source Reduction Programs

This category of potential programs was selected, as discussed in Section 3.3.2, as the third in order of priority for implementation within the area of source reduction. Yolo County has selected a range of in-house source reduction alternatives evaluated in Section 3.3.1 for implementation during the short-term (1991 to 1995) planning period. A strong governmental program has the potential to help accomplish all of the objectives delineated in Section 3.1.1 and scored relatively high against the 13 criteria presented in Section 3.3.2 and in Table 3-1. In addition, development of a full government program will provide training to Yolo County government staff that will be invaluable in assisting consumers and businesses, providing a clear signal of resolve as well as positive examples regarding source reduction. These programs consequence to the waste stream will be a net reduction in waste generation and a sift of waste types to more durable, reusable and recyclable goods. Specific programs selected by Yolo County include:

- **Local Government Programs**

In coordination with the City of Woodland, the county will execute waste evaluations for all appropriate county offices. The county will pursue technical assistance available from the state as provided under SB 1322 (CH 1096/89). These audits will be targeted to develop data on what wastes are produced and by which activities as a first step in determining what additional activities to target for source reduction in county offices.

The county will also develop an employee education campaign designed to encourage at-work and at-home source reduction practices such as use of scrap paper, reuse of packaging, etc. Specific measures may include encouraging employee and office use of reusable items such as using ceramic coffee cups instead of disposable cups, and replacing paper towels with cloth towels.

The county will review all internal and external forms used by county departments to determine whether the use of double-sided forms can be increased or otherwise reduced. Increased use of electronic mail and continued greater computerization of county functions will also be pursued.

The county will also develop a plan for the phase-in of additional double-sided copying machines in appropriate offices and areas of high volume use.

Finally, public works projects will consider the use of trees, shrubs, and ground cover that produce relatively little green waste whenever possible.

3.4.2 Source Reduction Programs Not Selected

Two categories of source reduction programs have not been selected for implementation by the county at this time; regulatory programs and economic incentives. Regarding the former, the county believes that residents and businesses should first be provided the opportunity to

implement and practice source reduction through voluntary means. Only if these voluntary measures prove unsuccessful will the county consider regulatory mechanisms.

Regarding the latter, county funds for creation of economic incentives are very limited. It is felt that in the short-term, scarce funds should be dedicated to those activities that will have the greatest impact on the greatest number of generators. The county will, however, actively pursue state grants for source reduction implementation. If obtained, the county will consider using those funds for establishing economic incentives.

3.4.3 Estimate of Anticipated Diversion

Diversion resulting from source reduction is unlike diversion resulting from other activities in that rather than reducing a given subsection of the waste stream, source reduction reduces the entire waste stream. Source reduction alternatives are unlikely to achieve the quantifiable rates of diversion possible from recycling and composting alternatives. Section 18733.2(a)(2) of the regulations requires that the county quantify changes in source reduction each year if it chooses to count any increased level of source reduction towards meeting diversion goals. Unfortunately, this quantification is difficult and a great deal of effort will be necessary if the county is to systematically and annually quantify gains in source reduction. This effort is particularly extensive compared to the relatively small contribution that source reduction is likely to make in accomplishing mandated diversion goals in the short-term. The county believes that the goal of increasing source reduction rates will be best served by focusing first on developing strong public and private sector programs. Also, the controversy surrounding what can count as source reduction diversion credit and how it should be counted remains unresolved. Given limited financial and staff resources, the county will quantify source reduction rates only at the end of the short-term planning period if deemed necessary by the county, and will at that time count any identified diversion towards accomplishment of diversion goals.

U.C. Davis has quantified anticipated source reduction diversion rates for the campus. The programs are described in Appendix E. Anticipated diversion rates for the university are summarized in Table 3-3.

Table 3-3
Future Diversion Levels
by Material Type for U.C. Davis
in Tons per Year (TPY)

Waste Type	1995	2000
High Grade Paper	464	490
Bulky Items	58	61
Total	522	551

3.4.4 Required Facilities Development/Expansion

It is not anticipated that implementing any of these source reduction measures will require new and/or expanded facilities.

3.5 SOURCE REDUCTION PROGRAM IMPLEMENTATION

3.5.1 Responsible Entities

The Yolo County Department of Public Works and Transportation recently appointed a Waste Reduction/Recycling Coordinator who has general responsibility for implementing AB 939 related source reduction and recycling programs. The responsibilities of the Coordinator include:

- Developing policy direction
- Acting as liaison to the staff of the various county departments involved in developing and implementing source reduction and recycling programs
- Monitoring county progress in achieving source reduction goals and objectives

- Acting as a liaison to source reduction program staff in cities within the wasteshed
- Reporting periodically to the Yolo County Waste Advisory Committee
- Providing coordination as necessary between the implementation efforts for source reduction, recycling, and composting
- Coordinating outreach efforts to the private sector, in conjunction with the Yolo County Waste Advisory Committee
- Monitoring state and federal source reduction efforts
- Coordination and promotion of household hazardous waste source reduction programs

The Department of Public Works and Transportation and the Waste Reduction/Recycling Coordinator will be the lead entities responsible for the implementation of the selected technical assistance, rate structure modification, and local government programs selected in this component. These parties will work closely with the Waste Advisory Committee and other jurisdictions of the county to ensure regional integration of programs where appropriate.

Responsible parties for implementation of U.C. Davis programs are discussed in Appendix E.

3.5.2 Required Tasks and Implementation Schedule

For source reduction, the short-term planning period will concentrate on providing technical assistance and educational materials to residents and businesses, and implementing source reduction programs in county government offices. The following outlines the key tasks required to implement selected activities. Required tasks for U.C. Davis programs are discussed in Appendix E.

Technical Assistance, Education, and Promotion

Waste Evaluations

- Identify model waste audit checklists used in other communities
- Create waste audit checklist forms based on local conditions
- Distribute checklists, offer waste evaluation assistance to commercial and industrial businesses

Site-of-Generation Composting Program

- Develop and distribute promotional and technical assistance programs for residential site-of-generation composting
- Identify key agricultural, food processing, and other area business/industry for potential site-of-generation composting implementation
- Recruit selected businesses for pilot composting program; provide technical information to other area businesses

Technical Assistance

- Determine availability of technical assistance funding from the state
- Design and conduct workshops, seminars, and public demonstrations focusing on source reduction
- Assist in identifying state and federal level grants, loans, and subsidies

- Contact cities within Yolo County to negotiate shared grant funding for regional waste exchange implementation.

Education

- Identify print and electronic media materials used successfully in other jurisdictions

- Produce and place local print and electronic media program based on findings

- Educate residents of the unincorporated county about the true diaper dilemma in Yolo County and the country; addressing biodegradability, volume relative to other components in the waste stream, and the options available in the county such as diaper services

- Inform residents of the options available for diversion of used clothing and textiles.

- Identify materials available from the state for use in schools. Develop projects and events for use in area schools based on findings

- Identify and coordinate with key area businesses to develop employer outreach program for employee source reduction education

Rate Structure Modifications

Modified Disposal Fees

- Evaluate adequacy of base tipping fee at YCCL; institute general increase as necessary to fund programs and encourage source reduction

- Identify selected wastes for application of increased differential fees

- Identify and apply differential fee; monitor subsequent changes in materials disposed

Local Government Source Reduction Programs

Local Government

- Identify county departments suitable for waste evaluation review

- Conduct thorough waste evaluations for all appropriate county departments

- Develop an employee education campaign to encourage in-house and at-home source reduction practices: extend current practices, such as the Department of Public Works and Transportation reuse of scrap paper, to all departments

- Review all internal and external forms used by county departments for reduction, or double-sided production; provide recommendations to appropriate departments

- Identify opportunities for increased use of electronic mail for departments that are now computerized; provide recommendations to appropriate departments

- Identify additional double-sided copying capacity needs; prepare plan for phase-in of additional machines; procure as appropriate

- Identify suitable county public works projects for use of plants that produce relatively little waste; identify sources and implement increased usage

3.5.3 Program Implementation Costs

The costs for source reduction program alternatives share some common characteristics, and yet differ in key ways from the costs for recycling, composting, and special waste programs. The reason, in each instance, has to do with the nature of source reduction. Source reduction programs focus on altering waste-producing behavior rather than shifting from the use of one management technology to another. From an economic perspective, source reduction is a long-term cost avoidance measure. Source reduction reduces the scope of the solid waste problem, for which management costs are likely to continue to grow annually. As with the strong institutional commitment that is necessary for developing successful source reduction programs, there must also be a long-term commitment to funding these programs because objectives are likely to be met over the longer rather than the shorter term.

Unlike costs for other types of programs that "manage" the waste stream, source reduction program costs are largely administrative and are related to local government programs to reduce waste, provide technical assistance and public education, and the research, development, enactment, and enforcement of regulatory measures (such as product or disposal bans, incentive programs or rate modifications). These administrative costs include activities such as hiring program staff, developing educational materials, designing a media campaign, and providing waste evaluation services. Also included are the potential increased costs to consumers of specified products, and of the Yolo County Central Landfill.

Capital and operating costs related to equipment purchase and use are minimal for source reduction. Examples might include the increased cost associated with the purchase of copy machines capable of making double-sided copies or changes in industrial manufacturing processes that result in less waste per unit of production. Some of these increased costs will be offset by parallel cost decreases, such as reduced paper usage resulting from double-sided copying and reduced handling of commercial/industrial waste at the landfill.

It is difficult to quantify the costs associated with source reduction programs, as well as to accurately develop a direct comparison between level of program effort or funding and the

resulting amount of source reduction. Fortunately, the overall level of cost associated with source reduction programs will compare favorably with those for recycling and other waste management programs. One problem is the relative intangibility of source reduction measures, and the difficulty of evaluating activities that eliminate production of solid waste. In addition, the line separating source reduction from recycling is not always self-evident, and the distinction between them is interpreted in different ways. For this reason, it is historically the case that source reduction and recycling program costs have often been lumped together, with the great majority of the resulting total associated with recycling.

An informal telephone survey of several of the more developed municipal source reduction programs in this country (Seattle WA, Minneapolis MN, Newark, NJ, and Berkeley CA) provided almost no information on actual program costs. It is apparent that the type of source reduction program cost identification required by the Section 18733.5(d) of the regulations has probably not been attempted elsewhere in the country.

The remainder of this subsection contains source reduction program cost estimates (excluding U.C. Davis programs), given the above caveats, for local departments, businesses, and consumers for each of the three categories of programs selected in Section 3.4.

Public Sector Costs

The major costs of developing and implementing source reduction programs will be administrative. Aggressive pursuit of the source reduction objectives outlined in this component will annually require approximately one-half full time staff equivalent.

- Waste Reduction/Recycling Coordinator: Approximately 30 percent of the Coordinators time
- Approximately 5 percent of a senior staff person's time
- Approximately 10 percent of a clerical staff person's time

The cost of this staff time, including overhead is not likely to exceed $25,000 per year.

The principal source of funding for source reduction programs is revenue from tipping fees at the Yolo County Central Landfill. The implementation of some of the source reduction measures detailed above (e.g., rate structure modifications) may also provide revenue that can partially meet program costs.

Private Sector Costs

Many source reduction options require a major behavioral change on the part of consumers, which will entail direct costs to businesses and consumers. Buying a battery charger and rechargeable batteries will cost more initially than disposable batteries; hiring a waste auditor may only pay for itself over a number of years. However, source reduction techniques are relatively inexpensive relative to other options, such as paying for increased waste disposal costs. Many of the programs will pay for themselves through avoided costs, or may actually generate savings over time.

3.5.4 Implementation Summary

Table 3-4 presents a summary of source reduction program tasks including costs and timing. Appendix E discusses implementation of source reduction programs for U.C. Davis.

Table 3-4
Summary of Source Reduction Program
Implementation for Unincorporated Yolo County

Short-term Tasks (1991-1995)	Schedule	Costs
Technical Assistance, Education, and Promotion		
Waste Evaluations		
• Identify model waste audit checklists used in other communities; create waste audit checklist forms based on local conditions	Jan. 1993	**Approx. $25,000 for all efforts**
• Distribute checklists, offer waste evaluation assistance to commercial and industrial businesses	June 1993, ongoing	
Site-of-Generation Composting		
• Develop and distribute promotional and technical assistance programs for residential site-of-generation composting	June 1993	
• Identify key agricultural, food processing, and other area business/industry for potential site-of-generation composting implementation	June - Aug. 1993	
• Recruit selected businesses for pilot composting program; provide technical information to other area businesses.	June - Aug. 1993	
Technical Assistance		
• Determine availability of technical assistance funding from the state.	Jan. 1993	
• Contact cities within Yolo County to negotiate shared grant funding for regional waste exchange	Jan. - Dec. 1993	
• Design and conduct workshops, seminars, and public demonstrations focusing on source reduction	Mar. 1993 - ongoing	
• Assist in identifying state and federal grants, loans, and subsidies	Mar. 1993 - ongoing	

Short-term Tasks (1991-1995)	Schedule	Costs
Education		
• Educate residents of the unincorporated county about the true diaper dilemma in Yolo County and the country, addressing biodegradability, volume relative to other components in the waste stream, and the options available in the county such as diaper services	Sept. 1991 - June 1992; ongoing	
• Inform residents of the options available for diversion of used clothing and textiles	Sept. 1991 - June 1992; ongoing	
• Identify print and electronic media materials used successfully in other jurisdictions	Sept. 1991 - Mar. 1993	
• Identify materials available from the state for use in schools. Develop projects and events for use in area schools based on findings	Jan. - Dec. 1992; ongoing	
• Produce and place local print and electronic media program based on findings	Mar. 1993 - ongoing	
• Identify and coordinate with key area businesses to develop employer outreach program for employee source reduction education	Mar. - Dec. 1993	
Rate Structure Modifications		
Stratified Disposal Rate		
• Evaluate adequacy of base tipping fee at YCCL; institute general increase as necessary to fund programs and encourage source reduction	Sept. 1991 - Dec. 1992	
• Identify selected waste for application of increased differential fees	Sept. 1991 - Dec. 1992	
• Identify and apply differential fee; monitor subsequent changes in materials disposed	Jan. 1992; ongoing	
Local Government Source Reduction Programs		
Local Government		
• Identify county departments suitable for waste evaluation review	Sept. - Dec. 1992	

Table 3-3
Summary of Source Reduction Program
Implementation for Unincorporated Yolo County

Short-term Tasks (1991-1995)	Schedule	Costs
• Develop an employee education campaign to encourage in-house and at-home source reduction practices; extend current practices, such as Department of Public Works and Transportation reuse of scrap paper, to all departments	Sept. 1992 - June 1993	
• Conduct thorough waste evaluations for all appropriate county departments	Sept. 1992 - June 1993	
• Review all internal and external forms used by county departments for reduction, or double-sided production; provide recommendations to appropriate departments	Jan. - June 1993	
• Identify opportunities for increased use of electronic mail for departments that are now computerized; provide recommendations to appropriate departments	Jan. - June 1993	
• Identify additional double-sided copying capacity needs; prepare plan for phase-in of additional machines; procure as appropriate.	Jan. - June 1993	
• Identify suitable county public works projects for use of plants that produce relatively little waste; identify sources and implement increased usage	Jan. 1993; ongoing	

3.6 MONITORING AND EVALUATION

3.6.1 Methods to Monitor Achievement of Source Reduction Program Objectives

Section 18733.6 of the regulations requires that the county quantify changes in source reduction each year if it chooses to count any increased level of source reduction towards meeting the diversion goals. Unfortunately, this quantification is difficult and a great deal of effort would be necessary if the county were to systematically, and on an annual basis quantify gains in source reduction. This effort is particularly extensive when compared to the relatively small contribution that source reduction is likely to make in accomplishing mandated diversion goals in the short-term.

It is the county's belief that the goal of increasing source reduction rates will best be served by developing strong public and private sector programs during the short-term planning period. Given limited resources, the county will quantify source reduction rates only at the end of the short-term planning period, and will at that time count any identified diversion through source reduction activities towards accomplishment of diversion goals (see Section 3.6.2.).

Aside from the difficulties of quantification, Yolo County considers the goal of increasing source reduction rates to be extremely important, and the county plans to develop and implement a number of programs to achieve that goal. The county will annually monitor programmatic efforts in the public and private sectors, as outlined below, to ensure that policies and programs are being implemented.

Technical Assistance

- Targeted surveys of businesses to determine familiarity with county efforts, attendance at seminars or workshops, and the number of waste evaluations conducted and their results

- Targeted surveys of citizens regarding results of county's source reduction education and information dissemination efforts

Rate Structure Modifications

- Quantitative survey of disposal records and targeted surveys of haulers and recyclers to determine effectiveness of the modifications

Local Government Programs

- Targeted surveys of departments regarding internal waste evaluation programs, implementation of electronic mail, double-sided copying, etc.

- Targeted surveys of county staff regarding changes in their source reduction practices at work and at home

3.6.2 Quantification of Achievement of Program Objectives

As discussed above, source reduction goals and achievements are inherently more difficult to quantify than those for other components. In particular, it will be difficult to translate information on program achievements into tonnage and volume figures that can be used to calculate diversion rates. Quantitative source reduction monitoring and evaluation will occur at the end of the short-term planning period and will involve a combination of targeted waste sorts and targeted surveys of the specific waste-generating sectors. A number of the methods outlined below address more than one need, or conversely could result in double-counting. Thus careful coordination of the monitoring and evaluation methods will be crucial. In general the Department of Public Works and Transportation will have the responsibility to ensure that double-counting does not occur, and that all information is translated to provide diversion rates using consistent methods for conversion. The following indicates the types of methods that will be used:

Technical Assistance

- Review hauler and Yolo County Central Landfill records, and conduct targeted surveys of homeowners, gardening retail outlets, and other businesses to quantify increases in site-of-generation composting

- Annual report from regional waste exchange (if developed) regarding volume reduction through reuse, by waste type and by geographic area (for the county)

- Survey local diaper services to determine the number of accounts in the unincorporated county and corresponding reduction in disposable diaper usage

- Survey textile reuse operation to determine quantity of materials diverted from county sources in their operation

Rate Structure Modifications

- Review disposal records at Yolo County Central Landfill to determine total effect of changes in rate structures

- As part of AB 939 requirements, conduct periodic waste sorts at Yolo County Central Landfill to determine diversion rates of specific targeted materials resulting from rate structure modifications

Local Government Programs

- Targeted surveys of county departments to determine changes in disposal and reduction of targeted materials

3.6.3 Criteria for Evaluating Program Effectiveness

Yolo County will evaluate the ongoing effectiveness of the source reduction programs by annually applying the following criteria to each activity:

1. Did responsible entities execute required tasks? Responsible entities are specified in Section 3.5.1.

2. Were the tasks implemented on schedule? Task schedules are specified in Section 3.5.2.

3. Did the targeted sector(s) participate in the anticipated manner? Targeted sectors are residential, commercial, industrial, and self-haul.

4. Were all activities executed in an environmentally acceptable or approved manner? Do source reduction programs meet all local, state and federal environmental requirements?

At the end of the short-term planning period, Yolo County will use the following additional criterion to gauge the quantitative effectiveness of source reduction programs:

5. Did each source reduction program result in increased source reduction?

3.6.4 Parties Responsible for Program Monitoring, Evaluation, and Reporting

It is anticipated that the Department of Public Works and Transportation will be responsible for overall development and coordination of monitoring and evaluation activities and for review of the results. The Waste Reduction/Recycling Coordinator is responsible for ensuring that all necessary information is collected from county departments, businesses and the public.

3.6.5 Funding Requirements

Ongoing monitoring and evaluation efforts will be conducted by the Waste reduction/Recycling Coordinator and require approximately 80 hours of time per year. Assuming an approximate wage rate of $28 per hour (with benefits), these tasks represent an annual cost of $2,240 per year in staff time.

The Department of Public Works and Transportation is responsible for quantifying source reduction program effectiveness at the end of the short-term planning period. This task will involve approximately 120 hours of staff time. Again, assuming a wage rate of $28 per hour (with benefits) this evaluation will cost $3,360. Thus full program monitoring and evaluation costs in the final year of the short-term planning period will total $5,600.

3.6.6 Contingency Measures

The following contingency measures will be applied to each of the three source reduction program areas as appropriate.

1. If required tasks are not executed by the responsible entities, the county will consider the following measures:

    - Evaluate staffing adequacy
    - Revise job and task descriptions
    - Improve interdepartmental coordination
    - Identify reasons for lack of private sector participation and consider implementation of mandatory measures

2. If tasks are not implemented in a timely manner the county will consider implementation of the following:

   - Reevaluation of staffing adequacy
   - Revision of job and task descriptions
   - Improve interdepartmental coordination
   - Identify reasons for lack of private sector participation and consider implementation of mandatory measures

3. If targeted sectors fail to participate adequately or as anticipated the county will consider implementation of the following:

   - Survey anticipated participants in each sector to identify reasons for lack of participation
   - Improve and increase education and technical assistance efforts for county departments, businesses, and the public
   - Review voluntary efforts by businesses and the public to determine need to institute mandatory programs
   - Evaluate effectiveness of economic incentives and consider implementation

4. If source reduction programs do not meet local, state or federal environmental requirements, the county will consider implementation of the following:

- Identify the nature of the problem
- Correct the problem as necessary

SECTION 4

RECYCLING COMPONENT

SECTION 4
RECYCLING COMPONENT

This section examines the existing and planned recycling activities which comprise unincorporated Yolo County's recycling program. Discussion of existing and planned activities for U.C. Davis is contained in Appendix E. By analyzing existing conditions and evaluating various recycling alternatives, a comprehensive recycling program consisting of four distinct recycling alternatives is identified. The participation of the county's residents, businesses, waste management firms, recycling industries and local government will be encouraged through the phased implementation of the recycling program presented in this section.

4.1 OBJECTIVES

The objectives established for the recycling program are based on analysis of the types and quantities of materials available for recycling, as identified in the Solid Waste Generation Study (SWGS). Five principal waste categories are targeted for waste diversion through the various components of the recycling program presented in this section: paper, plastics, glass, metals, and other organics.

Objectives for each of the five recycling alternatives selected for unincorporated Yolo County's recycling program are summarized below:

- Drop-off Centers: The objective is to recycle 109 tons (0.3 percent) annually by January 1, 1995, and 138 tons (0.3 percent) annually by January 1, 2000.

- Office Paper Recovery: The objective is to recycle 56 tons (0.1 percent) annually by January 1, 1995, and 72 tons (0.2 percent) annually by January 1, 2000.

- Materials Recovery Facility: The objective is to recycle 2,702 tons (6.6 percent) annually by January 1, 2000.

- Bin Transfer Operation: The objective is to recycle 321 tons (0.9 percent) annually by January 1, 1995, and 451 tons (1.1 percent) annually by January 1, 2000.

- U.C. Davis Recycling Programs: The objective is to recycle 560 tons (1.5 percent) annually by January 1, 1995, and 2,716 tons (6.6 percent) annually by January 1, 2000.

In addition to the objectives stated above, Yolo County has established the objective of encouraging market development for recovered materials through:

- Continued monitoring of market development goals, policies, and activities on the federal and state level in order to identify opportunities for local applications; and

- Continued examination of county procurement practices to identify additional products containing recycled content for purchase preferences.

4.2 RECYCLING PROGRAM EXISTING CONDITIONS

The unincorporated county has several recycling programs that are currently achieving waste diversion. This section will briefly describe the existing recycling programs, both public and private, that are currently operating in the county. It is acknowledged that the cities of Woodland, Winters, Davis, and West Sacramento have drop-off and buy-back centers that are undoubtedly used by some residents of the unincorporated county. Because of the reporting and accounting methods used by recycling operators in Yolo County, it is difficult to determine the exact percentage of recycling materials that can be reliably credited to individuals, residences, or businesses in the unincorporated areas. Further discussion of those options are located in the Recycling Components of each respective city. The unincorporated county will not be taking any diversion credit from these city activities at this time.

Existing diversion credits are limited to those activities taking place at the Yolo County Central Landfill. These activities are discussed below. Current recycling programs at U.C. Davis are

described in Appendix E.

4.2.1 Current Recycling Activities

Drop-off Center

The Yolo County Department of Public Works and Transportation operates two drop-off facilities; one at the Yolo County Central Landfill (YCCL), and the other located at the Esparto Convenience Center Recycling Facility (transfer station). Table 4-1 summarizes the types and quantities of materials collected at the YCCL facility. The transfer station has operated since 1975, the drop-off site has only been open since June 19, 1991, thus is not credited with a baseline (1990) diversion rate. Local residents in areas surrounding the Esparto Convenience Center Recycling Facility, including the Capay Valley, will now have the opportunity to voluntarily recycle newspaper, steel cans, aluminum, plastic soda bottles (PET) and milk jugs (HDPE), and glass.

Curbside Collection

Presently there is one curbside collection operation in the unincorporated areas of the county. Davis Waste Removal collects a small percentage of curbside recyclables from an unknown number of unincorporated county residences.

The unincorporated area of Clarksburg has been awarded a California Department of Conservation grant to begin a community sponsored curbside program for 100 homes. The Clarksburg curbside program is currently being implemented.

Transformation

Agricultural waste materials (e.g., rice hulls) that can be used as a fuel are sent to the Woodland Biomass Facility. These materials would be left on-site, disked into the ground, or burned on-site if the biomass facility was not located close by. The transformation of agricultural materials

and bulky wood wastes is discussed in greater detail under Special Waste, Section 6.

4.2.2 Quantities Diverted

The quantities of materials diverted through recycling activities, as determined by the SWGS for 1990, are summarized in Table 4-1.

Table 4-1

Unincorporated County (including U.C. Davis)

Waste Diversion

Waste Type	Recycling (YCCL Drop-off) (TPY)	U.C. Davis Programs (TPY)
Newspaper	10.4	83
High-grade	34.9	86
Other plastic	2.3	
Other glass	9.3	186
Aluminum	0.8	2
OCC		142
Mixed Paper		21
TOTAL	57.7	520

4.2.3 Anticipated Decrease of Recycling Activities

There are currently no recycling programs or facilities in the county that are expected to decrease in scope or be phased out during the short and medium-term planning period. On the contrary, recycling activities are expected to be enhanced in the future so that existing programs become a more effective means of diverting waste. Should a recycling alternative be phased out or terminated in the future, it will be because the county determined that it did not prove to be feasible based on cost, technical requirements, or the time frame required for achieving the diversion mandates specified in Public Resources Code Section 41780.

4.3 EVALUATION OF RECYCLING ALTERNATIVES

4.3.1 Description of Recycling Program Alternatives

As a result of several meetings between Yolo County staff and their consultants, the county decided to focus on eight (8) recycling alternatives for program planning purposes. The alternatives are grouped into two categories: 1) those that are based on source separation handling of waste; and 2) those that are based on materials recovery from the mixed waste stream. These alternatives are described below, including general technology description, consistency with local conditions in Yolo County, institutional barriers to implementation, cost, market conditions, and public versus private sector operation. The county has chosen not to evaluate changing of zoning and building codes to encourage recycling as required by AB 939. The opportunities for such in the unincorporated county are very limited. Yolo County is an agriculture-based community with few opportunities available to change zoning/building codes. Should zoning/building codes become an issue in the future to encouraging recycling, the county will investigate the alternative.

Source Separation Alternatives

The source separation alternatives require separation of recyclables from nonrecyclables at the place where waste is generated, whether the location is a residence or a place of work.

4.3.1.1 Drop-off Centers

General Technology Description. Drop-off recycling centers, as the name implies, receive materials on a donation basis from the general public. The drop-off center is typically the least expensive recycling service to establish, and the most common. These centers can take a single material, newspaper being the most common, or a full range of materials, including newspapers, corrugated cartons, high-grade waste papers, glass, aluminum and tin cans, scrap metal, used

motor oil, and other materials, depending on the availability of local markets.

Single-material centers will often require minimum storage capacity at an unattended site convenient to public access. Larger drop-off centers may provide public parking; bins for a variety of materials; storage and processing areas; paid and/or volunteer staff to assist the public and to monitor operations; and equipment ranging from magnetic separators to delivery trucks.

Drop-off centers are often operated by a charitable or civic group in order to raise funds. Newspaper-only programs, that work through a local waste hauler or paper dealer to provide an unstaffed drop-box at convenient locations, are also common.

Consistency with Local Conditions. This alternative is already employed on a limited basis in Yolo County, and is consistent with county policy which favors source separation over mixed waste processing. The county has selected drop-off recycling as a top priority activity for diversion of target materials. Consistency of drop-off centers with county siting requirements is performed on a case-by-case basis.

Institutional Barriers to Implementation. No institutional barriers to drop-off center development currently exist in Yolo County provided operations meet building and planning requirements.

Cost. Costs can range from several thousand to $50,000 depending on the level of on-site processing, site development requirements, and targeted materials.

Market Conditions. Refer to Appendix B.

Public Versus Private Ownership/Operation. Drop-off programs are typically operated and promoted by the private sector, particularly nonprofit groups. The role of the public sector, when involved in drop-off operations, is often in the area of providing a site and some

promotional support. The public sector involvement in the drop-off alternative is often to enhance private operations or fill a void in the absence of private operations. Such is the case in unincorporated Yolo County.

4.3.1.2 Buy-back Centers

General Technology Description. Buy-back centers purchase recyclables directly from the public and other recycling operations. The buy-back system provides an economic incentive to the public, and can recover significant portions of the waste stream that might not otherwise be recycled. Buy-back centers often target aluminum cans because of their higher sales value and resulting profit margin. Newspaper, glass, corrugated cartons, and high-grade waste paper are other materials that are often purchased at buy-back centers.

Buy-back centers must be staffed at regular hours. Weighing, processing, marketing, management, and bookkeeping operations require full-time employees, the number of whom are proportional to tonnage of recyclables. Buy-back centers are more labor and equipment intensive than drop-off programs, and may require magnetic separators and flattener/blowers for cans, glass crushers, balers for paper and corrugated cartons, forklifts, computer pay-out systems, and trucking capabilities.

Consistency with Local Conditions. This alternative already exists on a limited basis in the cities of Yolo County, and consists primarily of beverage container redemption operations mandated by state law at some supermarkets. The buy-back option in Yolo County is currently not considered a viable option due to lack of population density and economic sustainability.

Institutional Barriers to Implementation. No institutional barriers are anticipated, provided that the buy-back operation meets the building and planning requirements of the county.

Cost. Costs are similar to drop-off facilities, however, buy-backs require the purchase of scales

and having cash on hand for redemption. With on-site materials processing capability, approximate costs are $100,000.

Market Conditions. Refer to Appendix B.

Public Versus Private Ownership/Operation. Buy-back centers are typically private enterprises, and depend on revenues from the sale of materials to cover operating costs. Establishment of this alternative by the public sector is appropriate when it does not create competition with existing private operations, or when the public does not have reasonable access to a local buy-back center.

4.3.1.3 Curbside Collection

General Technology Description. Curbside collection of recyclables from the household provides the maximum convenience to residents, and consistently recovers the highest tonnage of recyclables from the residential waste stream compared to drop-off and buy-back centers.

A number of operational features affect the waste diversion potential of curbside recycling, and few programs are entirely alike. Factors, such as the number and type of materials collected, the frequency of collections, the amount of commingling of material types allowed, and the degree of public awareness activities to motivate participation can affect program performance. The provision of storage containers to households, while adding to program costs, is becoming more common because it encourages participation.

Collection routes are typically serviced by a one-person crew in a specially designed vehicle that is equipped with compartments to hold separated materials. An array of balers, magnetic separators, can densifiers, and conveyor sorting lines are used at processing facilities for the curbside collected materials.

Curbside recycling involves extensive program management, material collection, material processing, and promotion. Capital costs usually include vehicles, household containers, a storage site, and processing equipment. Operational costs are dominated by high labor and transportation outlays, as well as amortization and promotion costs. Sale of materials generates revenues, but the major economic benefit is often the avoided cost of landfill disposal.

Consistency with Local Conditions. Residential density in the unincorporated county is approximately 21 people per square mile. This makes curbside recycling very expensive to implement and not feasible when considering local geographic and demographic conditions. However, residential areas on the outskirts of Davis, Woodland, and West Sacramento may, and in the case of Davis, do participate in the curbside programs to be implemented in those cities.

Institutional Barriers to Implementation. The lack of franchise zones or other control mechanisms for waste collection in the unincorporated county creates an institutional barrier to the development of an efficient and cost-effective curbside collection system.

Cost. Typically, costs average from $1.00 to $3.00 per serviced household with economies of scale realized in dense residential areas with high participation rates. Costs can run significantly higher in low density areas such as unincorporated Yolo County.

Market Conditions. Refer to Appendix B.

Public Versus Private Ownership/Operation. Curbside recycling programs typically involve a mix of public and private involvement. Some cities or counties may provide collection, processing, marketing and promotional functions in-house, depending on the extent to which they are already involved in providing waste management operations. Most jurisdictions contract with the private sector to provide some or all services related to curbside recycling. Public sector initiation has historically been necessary to implement program planning and timing, whether program operations are contracted out or not.

4.3.1.4 Office Paper Recovery/Recycled Goods Procurement

General Technology Description. The recovery of high-grade papers, such as white ledger and computer print-outs, offers an important recycling opportunity for local governments. Office paper recycling at the desk started primarily in the public sector, spurred by federal programs in the late 1970s. In addition to the public sector, office paper recycling programs are becoming more prevalent now in the educational, utility, banking, and insurance sectors. At-the-desk recovery programs are less frequently provided to small offices because of lower office paper volumes. Multi-tenant office building programs are also less common because of the difficulty in coordinating unrelated tenants.

Office paper recycling occurs in two forms. The first is source-separated (or at-the-desk) recycling, in which the generator produces a wastepaper material that is essentially ready for transport to market. The second is a mixed waste stream in which office trash is kept separate from other wastes (e.g., cafeteria waste) and is transported to a processor for further separation.

The county has already instituted office paper recovery at some government facilities and utilizes a source-separated approach by encouraging employees to participate. The recovered paper is stored, consolidated at central locations, and later picked up and delivered to markets on a regular basis.

The Board of Supervisors for Yolo County has also established a procurement policy through county ordinance 90-82. The ordinance specifies the use of recycled-content products for all county government offices when available at no greater cost than virgin materials. The ordinance also encourages the use of life-cycle cost analysis when evaluating the purchase of new products, office equipment and machinery, and heavy equipment. The intent of the ordinance is clearly to expand the breadth of recycled products used in the county.

There are several supportive policies that can ensure the success of ordinance 90-82. Yolo could

develop purchasing preferences for county purchase of durable, recyclable, recycled content, and reusable products. State law now allows local governments to establish preferences and to define the amount of that preference. National studies have shown that in practice, even when 5 to 10 percent price preferences are offered, actual preferences paid for recycled paper, for instance, average 1 to 2 percent. The bidding process can be modified to reduce costs for suppliers of preferred material by offering longer-term contracts and smaller bid groupings that are specific to subgrades of a particular material, such as paper. Suppliers of recycled materials may then compete more easily on a cost basis with suppliers of virgin materials. Preferences for durability or ease of repair could be applied to vehicles and to office and other machinery to increase the useful life of these purchases. In general, the county could review current procurement practices to ensure that the process is as efficient as possible and that unnecessary materials are not ordered.

The county could create purchasing specifications or set-asides for products that are made with recycled materials or that are more durable. This option could involve setting minimum target quotas and dates for procurement of specified preferred materials by county agencies. Preferences and quotas often work well in tandem.

Through AB 4 (Chapter 1094, Statutes of 1989), the county is required to review its contract provisions and delete any impediment to the purchase of recycled products. AB 4 also requires local agencies to revise their Request for Bid forms to require bidders to specify the minimum, if not exact, percentage of recycled product in the products offered and both the post-consumer and secondary waste content regardless of whether the product meets any minimum recycled content standards. The county may then collect data on vendors who offer recycled products and percentages of recycled content in these products. This information will aid the county in calculating its total annual purchases of recycled products.

Consistency with Local Conditions. Office paper recovery has been implemented at county offices in Woodland and is entirely consistent with county recycling policy. Recycled goods

procurement has also been established in county government offices.

Institutional Barriers to Implementation. There are no established institutional barriers impacting implementation of this alternative as a government operation, nor are there any such barriers to discourage office paper recovery in the private sector.

Cost. Approximately $1.00 per participating desk for collection bins, assuming collection costs are off-set by revenue from sale of materials. Cost of procurement preferences will entail the potentially higher cost of recycled content goods.

Market Conditions. Refer to Appendix B.

Public Versus Private Ownership/Operation. Government in-house office paper recovery programs may use existing staff or existing contracted building maintenance workers to perform functions such as consolidating loads from worker spaces, and preparing and delivering materials to market. Contracting with an outside recycling firm to perform these functions is also common practice. Private sector office paper recovery often occurs with little or no public sector involvement. Governments are playing an increasingly active role in encouraging businesses to pursue office paper recovery programs, and will work with private operators by providing educational or technical support to the business community. Public/private partnerships are compatible and common with this alternative.

4.3.1.5 Commercial Collection Programs

General Technology Description. Many commercial establishments offer opportunities for recycling because of the high concentrations of readily recyclable materials found in their waste. Historically, the presence of commercial recycling programs has been highly dependent on market prices and on private entrepreneurial efforts. However, in the last several years, local governments have been working with private industry to implement full-scale commercial

recycling programs.

The material most often targeted for commercial collection is corrugated containers, one of the largest components of the waste stream that can be readily recycled. Collection of glass containers, especially from bars and restaurants, is rapidly developing into a major recycling program. This is particularly true in California, where the glass industry is actively promoting the concept. Sometimes other materials are collected, such as metals, plastics, textiles, and oils, usually by scrap dealers who have made arrangements with individual large waste generators.

Most large generators of corrugated containers have ongoing recovery programs, and their containers are not included in landfill waste composition figures. Nevertheless, there remains a significant amount of unrecovered corrugated paper in the waste stream, depending on the concentration of commercial and manufacturing sources of waste in the community.

Consistency with Local Conditions. The commercial recycling alternative is already established locally through the private sector and is consistent with county policy encouraging recycling.

Institutional Barriers to Implementation. No significant institutional barriers are in effect within the unincorporated areas of the county. However, market prices for the recovered materials, as well as avoided disposal cost realized by commercial waste generators, can be major factors affecting the extent to which this alternative is actually pursued. The dispersion of commercial and industrial accounts across the unincorporated county also detracts from the feasibility of a commercial collection program.

Cost. Assuming new development of multi-material collection from commercial establishments and adequate processing capabilities, approximate capital costs equal $200,000.

Market Conditions. Refer to Appendix B.

Public Versus Private Ownership/Operation. With rare exception, this alternative is employed entirely by the private sector. Program design, implementation, operations and marketing are typically private sector functions. The main exception to this rule is when a government has commercial recycling collection included as a condition for granting a franchise agreement for waste collection within the jurisdiction.

Mixed Waste Alternatives

These alternatives recover recyclable materials from the mixed waste stream after it has left the point of generation.

4.3.1.6 Floor-sort Recovery

General Technology Description. Floor-sort recovery operations (particularly at landfills and transfer stations) offers the opportunity to recover uncompacted commercial loads, typically debris boxes. The system generally consists of a flat tipping floor upon which targeted loads are dumped, with below-grade storage bins for recovered material. The types of materials that would be targeted would depend upon the types of wastes received and the availability of markets or other outlets for the materials. In general, wood, soil, and metals may be among the materials that recovery would focus on. Rejects from the system could be transferred to the landfill tipping face for disposal.

The floor-sort system can also offer a public disposal area. Upon entering the landfill, the general public could be directed to a public disposal area. In addition to offering the potential for recovery of materials, this operation could effectively segregate the general public from commercial traffic, offering a safer unloading environment. As the general public enters the public disposal area, workers could inspect the loads for targeted materials as well as hazardous waste. Vehicles with a significant quantity of targeted materials would be directed to unload into dedicated, below-grade storage bins (drop boxes). This material could then be processed on-site,

if capacity is available, and then transferred to markets. Rejects from the public disposal area could be loaded into drop boxes and transferred to the landfill tipping face for disposal.

Yolo County is already planning the implementation of such an operation at the YCCL site. Locally referred to as the "bin transfer facility", it is anticipated to target self-hauling residents for materials including wood and yard waste, scrap metals, white goods, and "urban ore".

Consistency with Local Conditions. Floor-sort recovery is consistent with the county's desire to maximize diversion of recycled materials from the Yolo County Central Landfill. The Report of Disposal Site Information (RDSI) for YCCL describes plans for a bin transfer operation that will be targeting residential self-haul loads beginning in September of 1992.

Institutional Barriers to Implementation. There are no established institutional barriers to floor-sort recovery implementation.

Cost. Depending on specific design parameters and volume, approximate capital/development costs equal $200,000 - $400,000. Anticipated capital costs of the bin transfer operation at YCCL is $280,000.

Market Conditions. Refer to Appendix B.

Public Versus Private Sector Ownership/Operation. This alternative is appropriate to either public or private operations. Public ownership and operation of recovery operations may be desired, as consistent with established policy. On the other hand, a city or jurisdiction may determine that contracting with the private sector for limited recovery activities at a publicly owned disposal facility is more cost effective.

4.3.1.7 Line-bale Recovery (Mechanical)

General Technology Description. In a line-bale system, mixed waste is placed on a conveyor before any material is sorted. The conveyor moves the material to a picking station where workers pull off recyclables, placing them in temporary storage bins for further processing, baling, or shipment to market. Sometimes additional conveyors may be incorporated into the system to move recyclables to the baling in-feed system. Another approach is to remove contaminants and leave the primary component, usually mixed wastepaper, on the belt. This is most effective when the feed material is very rich in that primary component and contamination is not excessive.

A combination of hand-picking materials from the belt and using mechanical sorting equipment is the main feature of this type of system. Magnetic or air vacuum equipment is employed in a few line-bale operations.

Line-bale systems typically process a throughput load of between 200 and 500 TPD. Recovery efficiency depends greatly on the type of incoming solid waste, the target materials, and the type of operation. The recovered tonnage will vary accordingly. As an example, the Marin County Resource Recovery Facility (500 TPD design size) in San Rafael, California, achieves a recovery rate of roughly 40 percent from select commercial loads. The facility targets wood and yard waste, in addition to paper, cardboard, and other recyclables. Another line-bale type operation, the Rabanco Recycling Center in Seattle, Washington, (500 TPD design size) is currently achieving recovery rates of 60 to 70 percent. This facility, however, is very selective, and only accepts loads of material with an extremely high percentage of paper, Rabanco's major target material. Line-bale systems are growing in use, especially by large-scale waste haulers who operate landfills and transfer stations.

Consistency with Local Conditions. Line-bale recovery is consistent with the county's desire to maximize diversion of recyclable materials from the landfill.

Institutional Barriers to Implementation. There are no established institutional barriers to line-bale recovery implementation. However, this facility may require some institutional means to ensure that waste flows (particularly the commercial waste streams) are directed to the facility for economic viability.

Cost. Depending on specific design parameters and volumes, approximate development costs range from several million to $20 million. A preliminary assessment of facility cost for Yolo County indicates a capital cost of approximately $10 million for a 250-300 ton per day operation.

Market Conditions. Refer to Appendix B.

Public Versus Private Sector Ownership/Operation. Line-bale recovery facilities are most often owned and operated by the private sector, particularly by franchised waste haulers who operate a transfer station and therefore can identify and divert to the recovery facility targeted waste loads. In jurisdictions where transfer or landfill operations are conducted by the public sector (as in Yolo County), there is a trend for material recovery operations to be integrated into the existing operations and facilities. As is the case with floor-sort systems, line-bale recovery systems can be either public or private sector operations.

4.3.1.8 Landfill/Transfer Station Salvage

General Technology Description. Salvaging of recoverable materials, such as ferrous and nonferrous metals, white goods, and other marketable materials, is common practice at many landfills. This alternative is labor intensive, and usually employs minimal equipment beyond storage containers, and shared use of the rolling equipment (tractor, bulldozer, or loader) already utilized at the tipping face of the landfill. As with other manual materials recovery operations, the types of materials targeted generally depend upon the availability of markets or other outlets for the materials. Landfill salvaging may utilize existing labor, or be contracted to private firms

or individuals (both are common practices).

Consistency with Local Conditions. The operating permit for the Yolo County Central Landfill (YCCL) specifically restricts salvaging activity, therefore, this alternative is inconsistent with local conditions.

Institutional Barriers to Implementation. As stated previously, salvaging is currently prohibited at the landfill. If implemented, operational practices would need to be modified to assure safety for the public and for the employees engaged in the salvaging activities. The potential exposure to health and safety risks for those engaged in recovering materials during landfill operations would have to be addressed in the detailed program design.

Cost. Costs can range from several thousand to $20,000 depending on specific operational characteristics.

Market Conditions. Refer to Appendix B.

Public Versus Private Sector Ownership/Operation. Landfill salvaging operations are typically handled by the landfill operator, whether that be a public agency or private firm.

4.3.2 Evaluation Results

Section 4.3.1 described the recycling alternatives under consideration for Yolo County. The next phase of the planning process is prioritizing the options to determine the most appropriate recycling activities for the county. The evaluation of preferred recycling alternatives for the county employs the evaluation method as described in Section 2. Results of the evaluation process are described below. Each recycling alternative was examined in terms of the selection criteria defined in Section 2. The evaluation of the alternatives vis-a-vis each criterion is presented in Table 4-2 in a narrative form. Alternatives scoring is presented in Table 4-3 in a worksheet format.

Table 4-2
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Drop-off Centers	Buy-back Centers	Curbside Collection/Single Family
1. **Waste Diversion Potential**	Typically very low compared with other recycling options. Multi-materials centers divert less than 5% of waste from neighborhoods where established. May divert more if other alternatives not available. (L)	Usually target aluminum cans (less than 0.5% of Yolo wastes) for high profit margin. Programs can attain high volumes when market prices are strong for paper and glass. Waste diversion rarely exceeds 1-5% of total MSW in community where located. (L)	Highest potential for source separation recycling alternatives. 5-25% of residential waste diversion attainable depending on program design. Typically, no more then 5% of total community waste diversion is attainable. (L)
2. **Environmental Impact**	Minimal impact. Noise and litter may create nuisance. Traffic congestion controllable with proper siting. (H)	Generally no adverse impacts assuming proper management and appropriate siting. (H)	Minor additional traffic due to collection vehicles servicing routes. Curbside placement of recyclables may encounter some community resistance. Minimal adverse impacts. (M)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Drop-off Centers	Buy-back Centers	Curbside Collection/Single Family
3. **Operating Experience**	Extensively used throughout the U.S. 2,000+ multi-material programs. 4,000+ newspaper only programs. Appropriate to urban and rural areas. (H)	Established in nearly all metropolitan areas where materials markets exist. Several thousand single and multi-materials operations throughout the U.S. (H)	1,000+ programs nationwide. Many new programs expected in California in near term. Program design and results have varied significantly; now becoming more standardized. (H)
4. **Conformity with Local Markets**	Highly compatible with existing Yolo area materials markets. (H)	Highly compatible with existing Yolo area materials markets. (H)	All typically targeted materials have established market outlets in the Yolo area (H)
5. **Compatibility with Existing Programs in Yolo County**	Highly compatible with other recycling alternatives. Highly compatible with county plans for drop off at Esparto T.S. compatible with existing D-O operation at YCCL. (H)	Incompatible with local conditions and demographics (L)	May decrease volumes of materials at drop-off and buyback operations. (M)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Drop-off Centers	Buy-back Centers	Curbside Collection/Single Family
6. **Capital Cost**	Depending on program design, capital costs ranges from less than $10,000 to $50,000 per site. Minimal processing equipment and facility requirements. Transportation often provided by materials markets or private hauler. (H)	Capital costs for multi-material facility with processing capability greater than $100,000. Level of equipment depends on targeted materials and market specifications. (H)	Assuming provision of household containers and processing capability, capital costs may run $200,000+. (M)
7. **Cost Effectiveness**	Material revenues can be sufficient to cover operating costs. Dependable markets and local hauling service needed. Are most cost-effective with volunteer staffing. Approximate cost per diverted ton is $50. (M)	Materials revenues typically sufficient to cover operating costs. Program economics highly dependent on market conditions. Management, staffing facility requirements can be substantial compared to drop-off center. Approximate cost per diverted ton is $60. (M)	Materials sales alone are often insufficient to cover collection and processing costs. If waste diversion credits applied, program may be self-sustaining. Promotion and "economy of scale" very important to program economics. Cost per diverted ton may exceed $100. (L)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Drop-off Centers	Buy-back Centers	Curbside Collection/Single Family
8. **Long Term Costs of Environmental Impacts**	Negligible long term environmental costs associated with program. implementation. (H)	Negligible long term environmental costs associated with program. (H)	Negligible long term environmental costs associated with program. (H)
9. **Economic Opportunities for Public/Private Partnership**	Significant opportunities for private sector involvement to off-set county related costs. (H)	Previously attempted buy-backs in Yolo have failed due to lack materials volume (L)	Dependent on type of collection system Franchise system promotes strong public/private partnership. (H)
10. **Conformity with State Hierarchy**	Medium; consistent with second level of hierarchy. (M)	Medium;consistent with second level of hierarchy. (M)	Medium; consistent with second level of hierarchy. (M)
11. **Adaptability to Changes in County Activities and Needs**	Readily modified to incorporate changes in county recovery activities. Easily provides for increased generator involvement. Easily compensates for changing waste stream characteristics. (H)	Readily modified to incorporate changes in county recovery activities. Easily provides for increased generator involvement. Easily compensates for changing waste stream characteristics. (H)	Some inflexibility for changing waste stream characteristics and county needs due to storage and transportation equipment limitations and associated capital expenditures. (M)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Drop-off Centers	Buy-back Centers	Curbside Collection/Single Family
12. **Ease of Implementation**	Usually less than one year to implement. New institutional structures generally not necessary. (H)	Implementation time about 6-12 months. May require new staffing and/or responsibilities if government sponsored. Difficult to implement due to economic constraints. (L)	Implementation time 6-18 months. Anti-scavenging ordinances, new contract for services, public awareness campaign, etc. required for most programs. Need for pilot programs less given extensive experience of curbside collection in recent years. (M)
13. **Private Sector Participation**	Strong private sector involvement. Non-profit group sponsorship is common. (H)	Highly established in private sector. Price incentive encourages strong competition among operations. (H)	Highly integrated with private sector. Waste haulers and private enterprises often contract with government to provide service. (H)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Office Paper Recovery	Commercial Collection	Floor-sort Recovery (manual)
1. **Waste Diversion Potential**	Can be significant for specific sites such as government offices, banks, single-tenant office buildings. High grade office paper comprises about 3% of MSW nationwide. Generally low waste diversion potential. (L)	5-15% recovery of commercial/industrial waste stream can be accomplished, depending on targeted materials. Typically less then 5% recovery of total waste stream. (M)	5-15% of uncompacted loads can be accomplished depending on targeted materials. Typically less than 5% recovery of total waste stream. (M)
2. **Environmental Impact**	No significant impacts. (H)	Generally minimal impact. Minor traffic and noise potential during collection times. (H)	Potential noise, odor, aesthetic, and/or traffic impact. Impacts are known and controllable through appropriate siting,design, and operation. (H)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Office Paper Recovery	Commercial Collection	Floor-sort Recovery (manual)
3. **Operating Experience**	Several hundred programs nationwide. Significant variation in program size and design. (H)	1,000+ programs nationwide. Large facilities and retail chains likely to have ongoing program for corrugated papers. Industry support for glass collection from bars/restaurants encouraging more program start-ups. (H)	Variations of this program used extensively at landfill and transfer stations throughout the country. (H)
4. **Conformity with Local Markets**	Local paper markets through materials processors and brokers. (H)	Local markets for papers, aluminum, and glass readily available through materials processors and brokers. (H)	Local markets for most materials readily available. (H)
5. **Compatibility with Existing Programs in Yolo County**	Alternative would be an expansion of existing office paper recovery at county offices. (H)	May decrease volumes of materials at drop-off and buyback operations. Limited commercial collection activities currently operating in unincorporated county. (M)	Currently no such operation at the YCCL facility. (L))

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Office Paper Recovery	Commercial Collection	Floor-sort Recovery (manual)
6. Capital Cost	Generally inexpensive to implement. About $1 per desk to provide containers. (H)	Existing programs usually operated as subsidiaries of material market operations or hauling businesses. Assuming all unincorporated areas multi-material collections and processing capabilities, capital cost will run $200,000+. (M)	Depending on specific design, cost $200,000+. Capital costs include paved area bins and loader(s). May be able to use existing equipment and/or staff. (M)
7. Cost Effectiveness	Generally inexpensive to maintain. Usually offered to large volume generators as free service by paper brokers. Relies on voluntary staffing and promotion in offices when established. (M)	Usually integrated with secondary materials market operations. If implemented as stand-alone system, may require subsidy depending on market conditions. (M)	Moderate cost effectiveness. (M)
8. Long Term Costs of Environmental Impacts	Negligible long term environmental costs associated with program implementation. (H)	Negligible environmental costs associated with program implementation. (H)	Some potential for long term environment costs associated with program. (M)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Office Paper Recovery	Commercial Collection	Floor-sort Recovery (manual)
9. **Economic Opportunities for Public/Private Partnership**	Public/private partnerships potential is high. Private sector often provides free collection service to large programs. (H)	Same as curbside. (H)	Similar to landfill salvage operations. Local government can potentially franchise operation to private sector as a means of off-setting public sector costs. (H)
10. **Conformity with State Hierarchy**	Medium; consistent with second level of hierarchy. (M)	Medium; consistent with second level of hierarchy. (M)	Medium;consistent with second level of hierarchy. (M)
11. **Adaptability to Changes in County Activities and Needs**	Easily provides for increased generator involvement and additional materials integration. Easily compensates for changing waste stream characteristics. (H)	Some inflexibility for changing waste stream characteristics and county needs due to storage and transportation equipment limitations and associated capital expenditures. (M)	Easily compensates for changing waste stream characteristics and/or recovery needs of the county. (H)
12. **Ease of Implementation**	Several weeks to six months to implement. Additional office administrative duty required. Difficult to implement in multi-tenant office buildings. In-house programs relatively easy to implement. (H)	Implementation time 6-18 months. May require ordinances/franchise agreements. Haulers are reluctant to implement due to dispersion of commercial sector (L)	Usually less than one year to implement. Can be readily incorporated into landfill operation. Planned bin transfer operation at YCCL to begin in 1992. (H)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Office Paper Recovery	Commercial Collection	Floor-sort Recovery (manual)
13. **Private Sector Participation**	Strong private sector involvement. Non-profit group sponsorship is common. Private local markets key to program operations. (H)	Recycling firms/ processors/waste haulers play major role in existing programs. (H)	Systems operated by private and public sectors. (H)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Line-bale (Mechanical/MRF)	Landfill/Transfer Station Salvage
1. **Waste Diversion Potential**	15-40% of the commercial waste stream, but typically less than 20% of total waste stream. Depends on targeted materials, waste composition, and market availability. (M)	Less than 5% of total waste stream. Depends on targeted materials, waste composition and market availability. (L)
2. **Environmental Impact**	Assuming appropriate siting and design, little or no noise, odor, aesthetic, or traffic impact. All pollutants can be completely contained. (H)	May present some hazard to workers. Hazards and environmental impacts are known and controllable. (M)
3. **Operating Experience**	Less than 20 commercial operations in U.S. Operating experience is increasing. A number of successful installations on the West Coast. (H)	Variations of this program used extensively at landfills around the country. (H)
4. **Conformity With Local Markets**	Local markets are available for most materials likely to be targeted by a MRF. Recovered materials quality is a concern with MRF. (H)	Flexible operation; recovery can be targeted to available County area markets. (H)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Line-bale (Mechanical/MRF)	Landfill/Transfer Station Salvage
5. Compatibility with Existing Programs in Yolo County	Limited materials recovery already occurs at YCCL. Cities in county are committed to concept for commercial and industrial waste streams (H)	Requires coordination with existing/planned recycling and waste management activities at YCCL and Esparto T.S. (M)
6. Capital Cost	Assuming new site and facility development, approximately $8 million. (L)	Few capital requirements: containers, vehicle for materials transport, and incidentals. (L)
7. Cost Effectiveness	Cost per diverted ton approximately $30-65. (M)	Moderate cost effectiveness;cost per diverted ton approximately $40-$50. (M)
8. Long Term Costs of Environmental Impacts	Some potential for long term environmental impacts associated with program implementation. (M)	Some potential for long term environmental costs associated with program implementation. (M)
9. Economic Opportunities for Public/Private Partnership	County government can tailor public/private contracts to specific owner/operator parameters. (H)	Local government can franchise salvage rights to private operators, thereby off-setting public sector costs. (H)
10. Conformity with State Hierarchy	Medium; consistent with second level of hierarchy. (M)	Medium; consistent with second level of hierarchy. (M)

Table 4-2 (Cont.)
Unincorporated Yolo County
Recycling Alternatives Analysis

CRITERIA	Line-bale (Mechanical/MRF)	Landfill/Transfer Station Salvage
11. Adaptability to Changes in County Activities and Needs	May require some facility and/or operational alterations to compensate for changing waste stream characteristics or future recovery needs. (H)	Easily compensates for changing waste stream characteristics or future recovery needs of the County. (H)
12. Ease of Implementation	Minimum 18 months implementation. Flow control may be required; new staff and funding mechanisms may be required. Cities are committed to concept. (M)	Adequate site near landfill required. May require revision to county codes. Implementation time likely to be less then 6 months. (H)
13. Private Sector Participation	High potential for private sector participation. Facilities often operated by private sector. (H)	Systems operated by private and public sectors. Due to its low cost and ease of implementation, salvaging can be easily incorporated into municipal landfill operation. (H)

Table 4-3
Recycling Component Diversion Alternatives Weighted Score
for Unincorporated Yolo County

Criteria	Weighting Factor	Drop-off Centers		Buy-back Centers		Curbside Collection/SF		Office Paper Recovery	
1. Waste Diversion Potential	14.5	1	14.5	1	14.5	1	14.5	1	14.5
2. Environmental Impacts	8.3	3	24.9	3	24.9	2	16.6	3	24.9
3. Operating Experience	10.1	3	30.3	3	30.3	3	30.3	3	30.3
4. Conformity with Local Markets	5.0	3	15.0	3	15.0	3	15.0	3	15.0
5. Compatibility with Existing Programs in Yolo County	8.2	3	24.6	1	8.2	2	16.4	3	24.6
6. Capital Costs	6.1	3	18.3	3	18.3	2	12.2	3	18.3
7. Cost Effectiveness	9.5	2	19.0	2	19.0	1	9.5	2	19.0
8. Long-Term Costs of Environmental Impacts	7.4	3	22.2	3	22.2	3	22.2	3	22.2
9. Economic Opportunities for Public/Private Partnership	4.8	3	14.4	1	9.6	3	14.4	3	14.4
10. Conformity with State Hierarchy	7.9	2	15.8	2	15.8	2	15.8	2	15.8
11. Adaptability to Changes	6.9	3	20.7	3	20.7	2	13.8	3	20.7
12. Ease of Implementation	7.2	3	21.6	1	7.2	2	14.4	3	21.6
13. Private Sector Participation	4.1	3	12.3	3	12.3	3	12.3	3	12.3
Weighted Score			253.6		218.0		207.4		253.6
Rank			1		5		7		1

Table 4-3 (Cont)
Recycling Component Diversion Alternatives Weighted Score
for Unincorporated Yolo County

Criteria	Weighting Factor	Commercial Collection		Floor-sort Recovery		Line-bale Recovery		Landfill/ Tr. St. Salvage	
1. Waste Diversion Potential	14.5	2	29.0	2	29.0	2	29.0	1	14.5
2. Environmental Impacts	8.3	3	24.9	3	24.9	3	24.9	2	16.6
3. Operating Experience	10.1	3	30.3	3	30.3	3	30.3	3	30.3
4. Conformity with Local Markets	5.0	3	15.0	3	15.0	3	15.0	3	15.0
5. Compatibility with Existing Programs in Yolo County	8.2	2	16.4	1	8.2	3	24.6	2	16.4
6. Capital Costs	6.1	2	12.2	2	12.2	1	6.1	1	6.1
7. Cost Effectiveness	9.5	2	19.0	2	19.0	2	19.0	2	19.0
8. Long-Term Costs of Environmental Impacts	7.4	3	22.2	2	14.8	2	14.8	2	14.8
9. Economic Opportunities for Public/Private Partnership	4.8	3	14.4	3	14.4	3	14.4	3	14.4
10. Conformity with State Hierarchy	7.9	2	15.8	2	15.8	2	15.8	2	15.8
11. Adaptability to Changes	6.9	2	13.8	3	20.7	3	20.7	3	20.7
12. Ease of Implementation	7.2	1	7.2	3	21.6	2	14.4	3	21.6
13. Private Sector Participation	4.1	3	12.3	3	12.3	3	12.3	3	12.3
Weighted Score			232.5		238.2		241.3		217.5
Rank			4		3		2		6

4.4 RECYCLING PROGRAM SELECTION

The purpose of this section is to discuss the results of the alternatives evaluation process by identifying, justifying, and describing in additional detail the selected recycling alternatives for implementation or expansion in unincorporated Yolo County. Section 4.5 presents specific implementation tasks for the selected recycling activities. Appendix E contains a discussion of selected recycling programs for U.C. Davis.

4.4.1 Identification and Justification of Selections

The selected recycling alternatives (as per the analysis performed in Section 4.3.2, and based on alternative descriptions defined in Section 4.2) for unincorporated Yolo County are as follows:

- Drop-off Centers:
  - County parks (3)
  - Esparto transfer station (1)
  - YCCL site (1)
- Office Paper Recovery Program
- Self-haul Bin Transfer Operation (floor-sort)
- Mixed Waste Recovery
  - Line-bale (mechanical)
- Commercial Collection

Each of these alternatives is described in further detail below, including the justification for its selection; extent of similar existing programs in the county and the required expansions needed; and new facilities and/or programs that will be required to meet the recycling objectives, as defined in Section 4.1.

4.4.1.1 Drop-off Centers

Drop-off recycling is a selected activity of the unincorporated county's short-term recycling program given the results of the alternative evaluation process presented in Section 4.3.2. The option was particularly strong in addressing environmental impact minimization, operating experience, and social adaptability criteria. As identified in the alternative's description (Section 4.3.1), drop-off recycling is also consistent with county recycling policy and plans. The likely consequence on the waste stream of this program will be to create a positive shift from one waste type to another, i.e., shift waste generation to more recyclable and marketable materials.

The county has established (as of 1991) one of three proposed drop-off recycling centers in county parks in order to promote recycling awareness and reinforce sound waste management practices. The county has already applied to the Department of Conservation for funds to activate this program. The two proposed centers are for the Yolo County parks at Knights Landing and Elkhorn. The Cache Creek site already has a small operation in place. The Parks Division has recommended that these areas be targeted for beverage container recycling based upon frequent day use, a year round season, available space, and year round maintenance supervision. Initial collection will be for glass and aluminum only. As the program develops, the county will also recover PET bottles. These sites will initially be run by the Department of Public Works and Transportation until the Parks Division can integrate the program into its system. The drop-off centers will be unattended during the week with the exception of routine park maintenance and monitoring of the collection containers. The county may consider arrangements with a local nonprofit organization to sponsor one or more of the sites. Such an arrangement should result in better public utilization of the drop-off centers, because recycling will be associated with a local charitable or civic group effort.

The county currently operates an extensive drop-off facility at YCCL, accepting tires, batteries, used oil, glass, aluminum, newspaper, white office wastepaper, wood, and PVC pipe. In addition, the county initiated a drop-off recycling program at the Esparto Convenience Center

Recycling Facility on June 19, 1991. Residents in surrounding areas, including Capay Valley, can now voluntarily recycle newspaper, steel cans, aluminum, plastic soda bottles (PET) and milk jugs (HDPE), and glass.) Both the YCCL and the Esparto drop-off centers are certified with the Department of Conservation, Recycling Division.

4.4.1.2 Office Paper Recovery Program

Office paper recovery is a selected recycling activity with evaluation results similar to those for drop-offs and buy-back centers. Office paper recovery was also selected because of its consistency with county procurement ordinances and policy, and recycling plans. The likely consequence on the waste stream of this program will be to create a positive shift from one waste type to another, i.e., shift waste generation to more recyclable and marketable materials.

The county has already implemented a white office wastepaper (WOW) recovery program in county offices. Current practice is for interested departments to contact a representative from the Department of Public Works and Transportation to arrange for the delivery of recycling bags made from woven HDPE. The bags are delivered to the office requesting the service, and staff members are instructed how to correctly recycle to minimize contamination which results in rejection or downgrading of loads. In the future, the county anticipates taking a more aggressive marketing stance towards the program, with plans to implement in all feasible county offices. The program is already rapidly expanding and the county encourages private business to adopt similar policies. Technical assistance to the private sector will be available through the county. Closely related to this program is the county's procurement ordinance mandating that by 1995, 50 percent of all paper products purchased by the county shall be recycled paper. This effectively illustrates the recycling principle of "closing the loop" and serves as a model for businesses.

Included in the county's procurement ordinance are guidelines for securing recycled products whenever possible, including durable goods. It encourages economic analysis of recycled

products on a life-cycle cost basis, not solely on lowest cost/product basis. Because the amount of material diverted through the purchase of recycled content materials is difficult to quantify, and does not necessarily divert material from the landfill, product procurement is not identified as a diversion activity, but rather presented here as a supportive policy that Yolo County is adopting.

4.4.1.3 Self-haul Bin Transfer Operation

The county will establish a bin transfer operation next to the east side of Waste Management Unit One of the Yolo County Central Landfill by September of 1994. Patterned after the traditional floor-sort facility presented in Section 4.3.1.6, a tipping floor or pad will be constructed with five 50 cubic yard bins available for transfer of waste to the fill face and salvage yards or recycling facilities. Three bins will be designated for refuse, one for wood and yard wastes, and another for white goods and scrap metals. Other salvageable materials, or "urban ore", will be set out to the side of the tipping floor and stored at the adjacent recycling storage yard for consolidation and transport. The Yolo County Department of Public Works and Transportation is committed to integrating an "urban ore" concept into the bin transfer operation. In the 1970s, the first "urban ore" program was developed at the Berkeley Landfill whereby extensive salvaging and reclamation took place. Windows, doors, bath tubs, kitchen sinks, and other reusable materials are reclaimed and sold to contractors and the general public. A similar program is operated by Garbage Reincarnation at the Sonoma County Central Landfill. The "urban ore" concept serves as an excellent means of diverting reusable construction/demolition debris, as well as providing a diversion outlet for many other wastes that are otherwise not targeted by drop-off operations. It is anticipated that the "urban ore" materials to be targeted at the YCCL bin transfer site would include residentially generated ferrous and non-ferrous metals, rubber products, wood, textiles & leather, and composite materials. The system is designed to be flexible to accommodate shifts in disposal patterns, as well as seasonal changes in the waste stream. The facility also serves as an inspection point to ensure that household hazardous wastes do not enter the landfill from the self-haul waste stream.

The bin transfer operation was created to divert a larger percentage of the source separated residential self-haul waste stream from the landfill. The facility is anticipated to handle approximately 300-400 vehicles per day. Current projections (Report of Facility Information (RFI), August 1992) estimate that refuse entering the facility will equal 40 tons per day. This represents 7 percent of the total refuse disposed at the YCCL. The preexisting YCCL drop-off center and the new bin transfer operation will provide a total recycling facility for the residents of unincorporated Yolo County.

The likely consequence on the waste stream of this program will be to create a positive shift from one waste type to another, i.e., shift waste generation to more recyclable and marketable materials.

4.4.1.3 Mixed Waste Materials Recovery Facility - Line-bale (Mechanized)

Line-bale recovery system development is a tentatively selected activity of the Yolo County recycling program scheduled for implementation in the medium-term. This option was tentatively selected for its consistency with local policy to maximize waste diversion from the Yolo County Central Landfill. It also addresses the problem of how to most efficiently divert material from a dispersed group of commercial and industrial generators. The likely consequence on the waste stream of this program will be to create little or no shift from one waste type to another. Mixed waste recovery has little waste generator involvement. Therefore, little impact is expected on their generation patterns.

Establishing a major materials recovery facility at YCCL will require a substantial planning and development period. A detailed feasibility study will be initiated as part of the CoIWMP process as a first step toward full implementation in the mid-term. Participation of other jurisdictions within the YCCL wasteshed will be considered during the feasibility study.

Although specific facility capacity is not determined at this time, the general technology will most likely be consistent with that of the line/bale system described in Section 4.3.1 (Description

of Recycling Alternatives). The recovery facility will target primarily the commercial and industrial waste streams currently disposed of at YCCL. The cities of Woodland, Winters, and West Sacramento, and the unincorporated county have agreed in principle to divert all commercial and industrial loads to the proposed facility as mentioned in their respective SRREs. Metals, glass, plastics, inerts, and paper waste categories will be targeted for recovery, and specific waste types will be determined based on market specifications and materials availability at the time of detailed facility planning.

The material recovery facility throughput capacity will need to be carefully assessed as part of a future feasibility study. As an estimate, long-term required capacity is estimated at 250 to 300 tons per day to accommodate commercial/industrial waste disposed in Yolo County (excluding City of Davis and U.C. Davis who have not selected a MRF as part of their recycling programs).

Three material recovery facilities similar to the type planned for Yolo County are operating on the West Coast and are presently diverting 40%-70% of incoming materials. Yuba-Sutter Disposal, Inc., in Marysville, California is recovering up to 65% of delivered materials, including wood, metals, glass, cardboard, newspapers, plastic, and miscellaneous paper. Marin County Resource Recovery Facility (500 TPD design size) achieves a recovery rate of roughly 40% from select commercial loads. Another line-bale type operation, the Rabanco Recycling Center in Seattle, Washington, (500 TPD design size) is currently achieving recovery rates of 60-70%.

Since recovery efficiency depends greatly on the type of incoming materials, the target materials, and the type of operation, these design parameters will be specifically addressed in the design process. In order for such an operation to be cost effective, the informal agreement between the cities and county will need to be formalized to ensure flow control. The county will define the nature and needs for flow control as part of the feasibility study during the preparation of the Countywide Integrated Waste Management Plan (CoIWMP).

4.4.1.5 Commercial Collection

Commercial collection enhancement is a selected activity of the Yolo recycling program for the short-term planning period because of its consistency with county policy to increase recycling efforts in all sectors of the local economy. Its relatively moderate ranking as well its operational nature suggests that the activity may not be a suitable undertaking of the county government. Instead it will be a private sector undertaking, in which local government serves as facilitator. The likely consequence on the waste stream of this program will be to create little or no shift from one waste type to another. Mixed waste recovery has little waste generator involvement. Therefore, little impact is expected on their generation patterns.

Under this activity, the county plans to encourage recycling of cardboard, glass containers, metals, and other materials generated at commercial and industrial facilities throughout unincorporated Yolo County. The county's role in commercial recycling will initially be to educate and motivate the private sector and their respective haulers to recycle, and to provide technical assistance and information to those businesses and haulers interested in implementing an ongoing program.

4.4.2 Expected Diversions

Expected tonnage of materials to be diverted from solid waste disposal through the recycling alternatives described above are listed in Table 4-4. The tonnage figures include tonnages to be diverted through new and existing programs throughout the short-term and medium-term planning periods. Figures include anticipated diversion from U.C. Davis programs. Diversion estimates for the bin transfer operation after 1995 are included in the numbers for the material recovery facility for 2000. Baseline tonnage figures for 1990 are based on data derived from the Solid Waste Generation Study.

Table 4-4
Expected Diversion
in Tons per Year (TPY)

Program: Esparto Drop-Off **Target:** Residential		
Material Type	**1995**	**2000**
ONP	24.0	30.6
Aluminum	0.2	0.3
Other Glass	10.6	13.6
PET Plastic	0.5	0.5
HDPE Plastic	0.5	0.5
Bi-Metal Cans	0.8	1.0
Total	36.6	46.5

Program: U.C. Davis Recycling **Target:** U.C. Davis Campus		
Material Type	**1995**	**2000**
ONP	68	331
Corrugated Paper	165	798
Mixed Paper	90	434
High Grade Paper	125	608
Other Glass	68	328
PET Plastic	1	5
HDPE Plastic	4	22
Aluminum	3	16
Bi-metal Cans	36	174
Total	560 TPY	2,716 TPY

Table 4-4 (continued)
Expected Diversion
in Tons Per Year (TPY)

Program: New Parks Drop-Off Centers (3) **Target:** Residential		
Material Type	**1995**	**2000**
Aluminum	6.9	8.8
Other Glass	6.9	8.8
Total	13.8 TPY	17.6 TPY

Program: YCCL Drop-Off **Target:** Residential			
Material Type	**1990**	**1995**	**2000**
ONP	10.4	16.7	21.4
Corrugated Paper	0.0	15.0	19.1
Other Glass	9.3	15.0	19.1
PET Plastic	0.0	1.5	1.5
HDPE Plastic	0.0	1.5	1.5
Other Plastic (includes PVC)	2.4	3.8	4.8
Aluminum	0.8	1.3	1.6
Bi-Metal Cans	0.0	4.0	5.1
Total	22.9 TPY	58.8 TPY	74.1 TPY

Table 4-4 (continued)
Expected Diversion
in Tons Per Year (TPY)

Program: Bin Transfer Operation **Target:** Residential, Self Haul		
Material Type	**1995**	**2000**
Ferrous Metal	8.0	9.0
Non Ferrous Metal	1.9	2.2
White Goods	7.0	12.0
Mixed Yard Waste	7.0	8.0
Rubber	13.0	14.7
Wood	1.6	1.8
Textiles	29.1	32.9
Composite	14.6	16.5
Bulky Items	6.0	7.0
C & D Waste	230.0	347.0
Total	318.2 TPY	451.1 TPY

Program: **Office Paper Recovery** **Target:** **Commercial**		
Material Type	**1995**	**2000**
High Grade Paper	56.2 TPY	71.7 TPY

Table 4-4 (continued)
Expected Diversion
in Tons Per Year (TPY)

Program: **Materials Recovery Facility (MRF)** **Target:** **Commercial, Industrial; Year 2000 only**		
Material Type	**Commercial**	**Industrial**
ONP	31.0	12.0
Corrugated Paper	1,257.0	559.0
High Grade Paper	480.0	0.0
Mixed Paper	14.0	18.0
HDPE Plastic	1.0	2.0
Polystyrene	3.0	0.0
Film Plastic	21.0	12.0
Other Plastics	3.0	1.0
CA Redemption Glass	27.0	2.0
Other Recyclable Glass	0.0	2.0
Aluminum Cans	3.0	1.0
Bi-metal/Tin Cans	3.0	1.0
Ferrous Metal	187.0	28.0
Non-Ferrous Metal	1.0	0.0
Rubber	5.0	1.0
Textiles/Leather	24.0	3.0
Composite Materials	4.0	2.0
Total	2,061.0 TPY	641.0 TPY

Data Sources for Table 4-4:

Esparto Drop-Off:

1992 figures based are on county DPW estimates. Tonnages were projected at 10 percent annually to 1995, then 5 percent thereafter.

New Parks Drop-Offs:

1992 figures based on county DPW estimates for three new sites in county parks. Tonnages were projected at 10 percent annually to 1995, then 5 percent thereafter.

YCCL Drop-Off:

1990 figures based on SWGS existing diversion data. Tonnages were projected at 10 percent annually to 1995, then 5 percent thereafter. Corrugated paper and bi-metal cans are assumed to be added by 1995; tonnages for 1995 are based on best professional judgement.

Self-haul Bin Transfer Operation:

1995 target materials are based on anticipated target materials from the county's 1991 RDSI and available materials in the self-haul waste stream. Percentages are based on best professional judgement. Ferrous and non-ferrous metal, rubber, wood, textiles/leather, and composite materials are assumed to be added by 1995 as part of an "urban ore" program.

Office Paper Recovery:

Baseline tonnages based on SWGS existing diversion data. Tonnages were projected at 10 percent annually to 1995, then 5 percent thereafter.

Materials Recovery Facility (Line-bale System):

Target materials and tonnage/percentage recovery rates are based on best professional judgement of reasonable MRF performance estimates.

U.C. Davis Recycling Programs:

Figures taken from the U.C. Davis SRRE, Appendix E.

4.4.3 End-Users for Recovered Products

The recycling alternatives selected by the county will generate a variety of materials requiring end-user markets. The types of markets anticipated for materials recovered from recycling activities are described in Appendix B. Numerous secondary materials processors, dealers, brokers, and end-user firms are located in the Northern California area, readily accessible to Yolo County.

During the short-term planning period, the recycling program will generate materials primarily in the paper, glass, metals, and plastics waste categories. Aside from price fluctuations typical of many commodity markets, the existence of well-established local markets for recyclables will likely continue through the next five years. However, the increasing supplies of recyclables generated by implementing more collection and material recovery programs may create regional gluts of certain materials. A likely consequence of flooded markets locally will be depressed revenues from material sales, higher transportation costs for marketing materials, and more stringent material specifications regarding contamination, density, and volumes.

While the county does not have control over the ultimate stability of local markets, nor the ability to substantially increase end-user capacity of mills for paper, manufacturing plants for glass, or smelting operations for metals, it nevertheless plans to pursue market development activities on the local level. Where possible, the county will strive to use recovered materials in its public works functions to stimulate local use. Additionally, the county plans to continue to monitor recycling market development goals, policies, and activities on the federal and state level in order to identify opportunities for local application. Senate Bill 1322, passed in 1989, focuses on establishing a number of committees and commissions to develop source reduction and market development strategies and an array of specific material market enhancement programs for paper, compost, plastics, tires, and batteries. The bill also provides for research and development, and public information programs, which can help local governments to implement targeted market development activities.

The Waste Board's recently created material exchange program (CALMAX) also provides a useful tool for government and private sector to identify markets for recovered materials. As appropriate the county intends to take advantage of this useful program.

4.4.4 Handling and Disposal Requirements for Implementation

Handling requirements for the collection of materials from locations in Yolo County, whether the collection points are businesses, industry, or recycling centers, are readily accomplished through a variety of specialized collection vehicles. Storage containers for recyclables are also widely available in many sizes, materials, and configurations. Processing of recovered materials often depends on a combination of manual and mechanical sorting operations to remove contaminants and prepare materials to market specifications. In most cases, these functions will be the responsibility of the private sector to arrange and execute with county oversight and encouragement.

There are no significant disposal requirements anticipated for the recycling program, other than for the portion of waste that will be handled as residual from the bin transfer and materials recovery facilities. This waste will most likely require on-site transfer from the recovery facility to the working face of YCCL. This can be readily accomplished through use of roll-off containers stationed at the recovery facility.

4.4.5 Required Facilities Development/Expansion

Material Recovery Facility

Materials recovery operations will require developing a new facility. Assuming that the facility will target mixed waste loads rich in recoverable materials from commercial, industrial, and select self-haul accounts now entering from county jurisdictions (not including City of Davis or U.C. Davis), the facility size will be on the order of 250 to 300 tons per day throughput

capacity. This sizing would require approximately 7 acres, depending on specific site design. In terms of existing waste flow patterns, a logical site for the facility would be the Yolo County Central Landfill. Selected loads would be directed to the facility for recovery, with by-passed materials transferred to the landfill working face for disposal. Facility requirements would include a structure of roughly 25,000 square feet with provisions for safe vehicle ingress/egress, vehicle weighing, sunken tipping floor, and waste transfer capability for rejected materials. Depending on the exact technology employed, recovery will be performed through a combination of manual and mechanical sorting techniques. A materials processing area and appropriate processing equipment also will be required.

Self-haul Bin Transfer Operation

The bin transfer facility will be located within the property boundary, at the gate entrance of the Yolo County Central Landfill. The maximum distance to the working face will be 12,500 feet. Approximately 300-400 passenger vehicles will use the facility daily. The solid waste will be unloaded on a tipping pad 30 feet wide and 145 feet long. Five 50 cubic yard bins will be recessed below the tipping pad, and recyclables will be stored at the adjacent recycling storage yard.

4.5 RECYCLING PROGRAM IMPLEMENTATION

4.5.1 Responsible Entities

Identified below are the county agencies or private sector entities responsible for implementation of the recycling alternatives selected by the county. Responsible entities for U.C. Davis programs are discussed in Appendix E.

Drop-off Centers

- Department of Public Works and Transportation: This agency plans to secure three new sites at local county parks, obtain equipment, make site improvements, provide publicity and operations support. The Parks Division will assume operation of these centers after start up. The department will be responsible for the ongoing operation and any expansions of the drop-off centers at the Esparto Convenience Center Recycling Facility and YCCL drop-off center. The department will also prepare plans and execute the expansion of the YCCL drop-off center to include reusable materials.

- Nonprofit organization(s): These groups may be selected to participate in any of the three new centers in the future.

Office Paper Recovery

- Department of Public Works and Transportation: This agency has implemented the first phase of the program and has purchased bags and stands for expansion to all county offices. The Waste Reduction/Recycling Coordinator plans to implement future expansions of the program within county facilities and oversee a technical assistance program for the private sector.

- Private sector businesses will implement or expand office paper recovery programs based upon the effectiveness of county's technical assistance program and availability of paper dealers and recycling firms to service Yolo County businesses.

Self-haul Bin Transfer Operation

- Department of Public Works and Transportation: The agency has completed the initial design phase of the project and incorporated it into the RDSI for the

YCCL. This department will be responsible for oversight of the operation, including contract maintenance with private sector participants in the program.

- Private Sector: Contracts for hauling refuse from the facility to the working face and for separation and processing of the recyclables will be awarded.

Materials Recovery Facility at YCCL

- Department of Public Works and Transportation: This agency will conduct a feasibility study as part of the County Integrated Waste Management Plan (CoIWMP) for siting a regional materials recovery facility at the Yolo County Central Landfill to service appropriate wasteshed communities. This department will also be involved in technical evaluations of plans affecting YCCL, and will coordinate ongoing landfill operations with new programs and facilities to be located at the landfill and throughout the county.

- Private Sector: Depending on the results of the feasibility study, the private sector may have a role in development, ownership, and/or operation of the materials recovery facility.

Commercial Collection Program

- Department of Public Works and Transportation: This agency plans to implement technical assistance and education programs to encourage commercial recycling among the private sector including haulers.

- Private Sector: Development of new and/or expansion of existing commercial recycling activities will be the responsibility of private waste haulers, recycling firms, materials brokers and dealers, or other private firms in Yolo County. Private sector

waste haulers currently provide minimal recovery operations, and other recyclers/brokers will be involved in expansion of commercial collections as more businesses implement programs.

4.5.2 Required Tasks For Program Implementation

The county has already implemented a number of recycling activities that are components of the recycling program described in this section. The tasks listed below identify steps required to expand existing recycling activities and to implement new alternatives chosen by the county.

Drop-off Centers (Existing)

- Monitor performance of the drop-off center at the Esparto Convenience Center Recycling Facility and YCCL and drop-off center.

Drop-off Centers (New)

- Identify sites and site needs for three centers in unincorporated Yolo County parks
- Determine the role of nonprofit organization(s) in new centers operations
- Accomplish site improvements, procure equipment, and establish market arrangements
- Launch a publicity/promotional campaign
- Implement operations

Office Paper Recovery

- The program has already been initiated by the Department of Public Works and Transportation
- Deliver WOW bags and stands to additional county facilities (libraries, fire stations, corporation yards, and the remainder of the county office complex)
- Procure additional materials marketing availability
- Perform training sessions and ongoing employee motivational campaigns
- Develop a technical assistance program for private sector offices in Yolo County
- Coordinate a technical assistance program with waste haulers, recycling firms, office paper dealers, and processors to service the program

Self-haul Bin Transfer Operation

- Identify site needs and parameters of an expanded "urban ore" operation at the existing YCCL drop-off center
- Accomplish site improvements and establish market arrangements for expanded urban ore operation
- Launch publicity/promotional campaign
- Implement expanded urban ore operations

- Obtain required permits for bin transfer operation
- Prepare engineering design and specifications for bin-transfer
- Construct bin-transfer facility
- Retain contractor for bin-transfer operations
- Commence ongoing operation

Materials Recovery Facility (Line-bale System)

- Identify participating jurisdictions
- Through the CoIWMP process, integrate city and county SRREs and conduct a feasibility study to determine the facility/system parameters, economics, funding sources,and targeted waste streams for a site at the Yolo County Central Landfill
- Develop policy issues including county's role in ownership/operation and flow control
- Define a vendor procurement process for facility construction and operation as appropriate; select vendor
- Obtain local and state reviews and permits as required
- Prepare plans and specifications for construction and operation of facility
- Construct facility, conduct start-up and performance testing

- Begin operations of materials recovery facility

Commercial Collections

- Provide technical assistance and informational materials to businesses, waste haulers, private recyclers, and processors to establish collection programs in Yolo County.

- Conduct a survey of commercial waste generators in Yolo County to identify opportunities for, and barriers to, commercial collection/recycling systems

The recycling program implementation tasks and schedule are presented in Table 4-5. Implementation of recycling programs for U.C. Davis is described in Appendix E.

4.5.3 Actions to Deter Unauthorized Removal of Recyclables

The County locks the gate at the Esparto Convenience Center and YCCL facility at the close of each operating day to, in part, deter the unauthorized removal of recyclables at those facilities. Unauthorized removal of recyclables at park facilities is controlled by parks staff.

Table 4-5
Summary of Recycling Program
Implementation for Unincorporated Yolo County

Tasks (1991-1997)	Schedule	Costs
Drop-off Centers (Existing)		
• Monitor performance of the recently established drop-off center at the Esparto Convenience Center Recycling Facility and YCCL Facility	Ongoing	
Drop-off Centers (New)		
• Identify sites and site needs for three centers in unincorporated Yolo County parks	Completed	Annual costs: $5,000
• Determine the role of nonprofit organization(s) in new centers operations	Sept. - Dec. 1992	
• Accomplish site improvements, procure equipment, and establish market arrangements	Sept. - Dec. 1993	
• Launch a publicity/promotional campaign	Jan. 1994	
• Implement operations	Jan. 1994; ongoing	

Table 4-5 (Cont.)
Summary of Recycling Program
Implementation for Unincorporated Yolo County

Tasks (1991-1997)	Schedule	Costs
Office Paper Recovery		
• The program has already been initiated by the Department of Public Works and Transportation	Ongoing	Annual cost: $15,000
• Deliver desk-side containers to additional county facilities (libraries, fire stations, corporation yards, and the remainder of the county office complex)	Sept. - Dec. 1991	
• Procure additional materials marketing availability	Sept.- Dec. 1991	
• Perform training sessions and ongoing employee motivational campaigns	Sept. 1991; ongoing	
• Develop a technical assistance program for private sector offices in Yolo County	Jan. - June 1993	
• Coordinate a technical assistance program with waste haulers, recycling firms, office paper dealers, and processors to service the program	Jan. - June 1993	
Self-haul Bin Transfer Operation		Capital cost: $280,000
• Obtain required permits for bin transfer operation	Fiscal yr. 1992-93	Annual cost: $145,000
• Identify site needs and parameters of an expanded "urban ore" operation at the existing YCCL drop-off center	Jan. - March 1993	

Table 4-5 (Cont.)
Summary of Recycling Program
Implementation for Unincorporated Yolo County

Tasks (1991-1997)	Schedule	Costs
• Accomplish site improvements and establish market arrangements for expanded urban ore operation	April - Sept. 1993	
• Launch publicity/promotional campaign	Sept. 1993	
• Implement expanded urban ore	Sept. 1993; ongoing	
• Prepare engineering design and specifications	Fiscal yr. 1993-94	
• Construct facility	July - Oct. 1994	
• Retain contractor for operations	Sept. 1994	
• Commence ongoing operation	Oct. 1994	
Materials Recovery Facility (Line-bale System)		
• Identify participating jurisdictions	July - Dec. 1992	Capital cost: approx. $10 million
• Through the CoIWMP process, integrate city and county SRRE's and conduct a feasibility study to determine the facility/system parameters, economics, and targeted waste streams for a site at the Yolo County Central Landfill	Jan. - Dec. 1993	
• Develop policy issues including county's role in ownership/operation and flow control	Jan. - July 1993	

Table 4-5 (Cont.)
Summary of Recycling Program
Implementation for Unincorporated Yolo County

Tasks (1991-1997)	Schedule	Costs
• Define a vendor procurement process for facility construction and operation as appropriate; select vendor	Jan. - July 1993	
• Obtain local and state reviews and permits as required	Jan. 1994 - Jan. 1996	
• Prepare plans and specifications for construction and operation of facility	Jan. 1995 - Jan. 1996	
• Construct facility, conduct start-up and performance testing	Jan. 1996 - June 1997	
• Begin operations of materials recovery facility	June 1997; ongoing	
Commercial Collections		
• Provide technical assistance and informational materials to businesses, waste haulers, private recyclers, and processors to establish collection programs in Yolo County	June 1992; ongoing	Annual cost: $3,800
• Conduct a survey of commercial waste generators in Yolo County to identify opportunities for, and barriers to, commercial collection/recycling systems	Jan. - June 1993	

4.6 MONITORING AND EVALUATION

Yolo County will monitor and evaluate the various activities comprising the recycling program to determine if the diversion goals are being achieved. The monitoring program will be performed annually and the quantities diverted will be reported in tons. This section describes the methods to quantify and evaluate recycling program achievements; the parties responsible for program monitoring and evaluation; the funding requirements; and the contingency measures to be implemented if a recycling activity is not fulfilling its diversion goal. An annual report will be submitted summarizing progress towards meeting diversion goals of the recycling program.

4.6.1 Methods to Quantify and Monitor Achievement of Recycling Program Objectives

Drop-off Centers

Program monitoring will be performed using the following methods:

1. Written records: The county will keep records of tonnage of materials recycled, by type, from the three planned drop-off centers plus existing operations at Esparto Convenience Center Recycling Facility.

2. Surveys: Other drop-off programs that may be identified during the planning period operating in unincorporated Yolo County will be surveyed on an annual basis to determine types and amounts of materials recycled.

Office Paper Recovery

Program monitoring will be performed using the following methods:

1. Written Records: The Department of Public Works and Transportation records of the office paper recovery program will be reviewed annually to determine diversion rates. Reports documenting the status and achievements of the technical assistance program will also be reviewed and summarized every year.

2. Surveys: Private recycling firms offering collection/marketing services for the recovery of high grade office papers will be contacted annually to determine the types and amounts of office paper recovered from businesses in unincorporated Yolo County. County departments will also be surveyed annually to identify the quantities and types of recycled-content products being purchased by county agencies.

Self-haul Bin Transfer Operation

1. Written Records: Detailed performance records will be required of the contractor operating the program. The county will require monthly reports to document throughput and recovery levels, and will evaluate written records of facility operations on an annual basis to establish diversion data by material type, tonnage, and participating jurisdiction.

Materials Recovery Facility

The method to be used for program monitoring is:

1. Written Records: Detailed performance records will be required of the facility operator, whether it is a private firm or the county. The county will require monthly reports to document throughput and recovery levels, and will evaluate written records of facility

operations on an annual basis to establish diversion data by material type, tonnage, and participating jurisdiction.

Commercial Collection

The methods to be used for program monitoring are:

1. Surveys: Plans are for an annual survey of selected types of businesses to be conducted to determine participation in commercial collection recycling activities. Examples of business sectors are: bars and restaurants for glass collections; retailers for cardboard recovery; manufacturers for wood, metals other recovery activities.

2. Interviews: Commercial haulers engaged in recycling activities in Yolo will be interviewed annually to determine levels of recycling relevant to the commercial collection program.

4.6.2 Criteria For Evaluating Program Effectiveness

Yolo County plans to evaluate the effectiveness of the recycling program by applying the following criteria to each of the five (5) selected recycling activities:

1. Were objectives for diversion attained? The specific recycling activity waste diversion objectives are listed in Section 4.1.

2. Did the responsible entities execute the required tasks? Responsible public agencies or private sector entities are identified in Section 4.5.

3. Were the tasks implemented on schedule? Task timing is outlined in Section 4.5.

4. Did targeted sectors participate in the anticipated manner? Targeted sectors are residential, commercial, industrial, and self-haul.

5. Were all recovered materials successfully marketed/used? Anticipated markets are discussed in Appendix B.

6. Were all activities executed in an environmentally acceptable/approved manner? Do the recycling program activities meet all local, state, and federal regulations?

4.6.3 Parties Responsible for Program Monitoring, Evaluation and Reporting

Data collection, conduct of surveys, analysis, and reporting will be the responsibility of the Department of Public Works and Transportation.

4.6.4 Funding Requirements

County staff time required to collect data from written records, perform required surveys, review data and determine program effectiveness, and prepare a written report summarizing the progress towards meeting recycling goals is estimated at 4 person weeks or $4,480.

4.6.5 Contingency Measures

Contingency measures will be implemented if monitoring of the recycling activities shows a shortfall in the attainment of the diversion objectives, or if a shortfall occurs in the diversion mandates specified in the California Integrated Waste Management Act of 1989.

The measures to be implemented are discussed based on the criteria identified in Section 4.6.2:

1. If the recycling activities objectives are not met, the county plans to consider

implementation of the following:

- Evaluate the diversion objective to determine if it is realistic based on actual program experience, or should be modified.

- Identify specific causes for poor participation and address the problem(s) through targeted public education and incentives, or through modification of some program features.

- Increase incentives through legislation, regulation, and/or rate setting as appropriate to each recycling activity.

- Consider new recycling alternatives as future technologies are developed.

2. If tasks are not executed by the responsible entities, the county plans to consider the following:

   - Evaluate adequacy of staffing levels.

   - Revise job descriptions or hire new staff as appropriate.

   - Identify barriers to anticipated private sector participation, and establish new incentives if appropriate.

3. If tasks are not implemented according to the established schedule, the county plans to consider the following:

   - Determine adequacy of schedule to allow for planning, procurement, environmental review and other pre-operational activities.

- Revise implementation schedule.

- Increase frequency of program monitoring and evaluation to adhere to schedule.

4. If target sectors fail to participate in anticipated manner, the county plans to consider the following:

   - Survey the sectors to identify the reasons for lack of participation.

   - Increase incentives through legislation, regulation, and/or rate setting.

   - Provide increased access to technical assistance.

   - Increase educational and promotional activities as appropriate to recycling alternative.

5. If markets/end-users for recovered materials prove inadequate, the county plans to consider the following:

   - Perform market survey for targeted materials to identify problems.

   - Research and secure alternative markets or end-uses.

   - Explore cooperative marketing strategies with other jurisdictions.

   - Enhance collection and/or processing activities to assure recovered materials meet market specifications.

6. If any recycling alternative does not meet environmental requirements of local, state, or federal regulations, the county plans to consider the following:

- Modify equipment, facility, material handling, or other program features to bring recycling activity into compliance.

- Seek a conditional exception to regulation if needed for program integrity.

SECTION 5

COMPOSTING COMPONENT

SECTION 5
COMPOSTING COMPONENT

Composting is a solid waste management option that can significantly reduce the amount of waste landfilled from the unincorporated county. Composting is defined as controlled biological decomposition that converts raw organic matter into a stabilized humus product. Compostable organic materials comprise about 17 percent of the unincorporated area's waste stream. While the diversion of all these materials is not practical, many of these materials are reasonably easy to segregate from municipal solid waste (MSW). This section discusses how composting is included in the county's strategy to move towards the legislated mandates set forth in AB 939.

5.1 OBJECTIVES

Based on the results of the Solid Waste Generation Study[1], and after the selection of composting programs by the county, the following overall composting objectives were developed. The current and projected diversion levels are shown, by material type in Table 5-1.

- Short-Term: To reduce the unincorporated County's total waste stream by 1.2 percent by January 1, 1995 by composting 440 tons per year of its organic material.

- Medium-Term: To reduce the unincorporated County's total waste stream by 4.2 percent by January 1, 2000 by composting 1,730 tons per year of its organic material.

- U.C. Davis Short-Term: To reduce the U.C. Davis total waste stream by 8.5 percent by January 1, 1995 by composting 3,187 tons per year of its organic material.

- U.C. Davis Medium-Term: To reduce the U.C. Davis total waste stream by 15.8 percent by January 1, 2000 by composting 6,509 tons per year of its organic material.

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[1] EBA Wastechnologies, Inc., "Yolo County Waste Generation Study" July 1991.

In addition, the county has set objectives for compost markets development. The primary objective for the county will be to create its own internal market for compost through its alternative landfill daily cover program described in Section 5.4.3. A second objective is to develop clean feed stock for composting into a high grade product for use by local farmers, residents, county public works and parks, Caltrans and other end users.

Table 5-1
Current and Projected Composting
Levels by Material Type for the Unincorporated Areas

Material	Available Tons[2]	Current		1995		2000	
		Tons	Percent	Tons	Percent	Tons	Percent
Grass, leaves	318	0	0	72	20	162	40
Prunings	163	0	0	37	20	84	40
Manure	4	0	0	1	20	2	40
Wood waste	1,418	0	0	330	20	1,480	80
Total	1,903	0		440		1,728	

Table 5-1A
Current and Projected Composting
Levels by Material Type for U.C. Davis
in Tons per Year (TPY)

Material	Current	1995	2000
Manure	2,940	3,187	5,754
Woodwaste	0	0	755
Total	2,940	3,187	6,509

[2] EBA Wastechnologies, Inc., "Yolo County Waste Generation Study" July 1991.

5.2 COMPOSTING PROGRAM EXISTING CONDITIONS

5.2.1 Current Composting Activities

Organized composting programs in the unincorporated county include a wood and yard waste diversion program operated at the Yolo County Central Landfill (YCCL) by a private company. Valley By-Products operates a wood and yard waste processing facility at the YCCL site. This company diverts clean urban wood waste and yard debris from commercial haulers and the public. The woody materials are currently processed into hog fuel for wood-fired electrical power plants, and a small fraction is composted into mulch and humus for the landscape industry. Chipped green waste is used as daily cover at the landfill. The company estimates that they are currently processing 3 percent of the available clean wood waste received at the landfill.

The City of Davis also operates a yard debris collection and processing program at an abandoned drive-in movie theater in the unincorporated county. However, this program collects yard debris only from the City of Davis, not from the unincorporated areas. Future planning and diversion from this latter program will be the responsibility of the City of Davis. Current composting activity at U.C. Davis is described in Appendix E.

5.2.2 Quantities Diverted

The only existing program which qualifies for diversion credit is U.C. Davis composting programs. Only a small fraction of the wood waste material diverted at the YCCL is currently being composted. Given the very small amounts involved, the county is only taking existing diversion credit for the university activity. The large majority is transformed via the Woodland Biomass Facility.

5.2.3 Anticipated Decrease of Composting Program Activities

No decrease in the current composting activity is anticipated for the unincorporated county. On the contrary, composting activities are expected to be enhanced in the future so that existing activities become a more effective means of diverting waste. Should a composting activity be phased out or terminated in the future, it will be because the county determined that it did not prove to be feasible based on cost, technical requirements, or the time frame required for achieving the diversion mandates specified in Public Resources Code Section 41780.

5.3 EVALUATION OF COMPOSTING ALTERNATIVES

5.3.1 Description of Alternatives

Yolo County evaluated three general composting alternatives: composting of source-separated yard debris; anaerobic digestion of organic waste; and composting of municipal solid waste (i.e., non source-separated refuse). The alternatives are described below including: technology description; consistency with local conditions; institutional barriers; costs; and market conditions.

5.3.1.1 Yard Debris Composting

Yard debris composting takes advantage of the naturally occurring biological decomposition of organic materials. Controlling, to the extent possible, the conditions of biological decomposition allows this process to occur efficiently. In general, composting techniques provide for a high surface-to-volume ratio, allowing greater surface area for bacterial and fungal action; a carbon/nitrogen ratio that best supports a thriving bacterial population; porosity or free air space to allow microorganisms to "breathe"; and sufficient moisture levels.

General Technology Description. There are three general yard debris composting techniques potentially available to the county:

- **Windrow composting.** Most existing yard debris composting operations in the United States use the windrow method. This is the simplest composting system. Workers build windrows (elongated piles) of compost material, periodically turn the windrows, and control moisture and temperature levels. Composting efficiency depends primarily on a good carbon/nitrogen ratio, proper moisture, and turning frequency to allow sufficient aeration.

- **Aerated static piles.** This method operates on principles similar to windrow composting. Aeration is artificially provided to the composting mass (e.g., by forming the piles over perforated pipes that draw air through the compost), which allows the size of the piles to be increased and the need for turning the piles to be largely eliminated. More controlled aeration leads to swifter decomposition and better odor control, especially in systems that filter air after it is drawn down through the piles. The land area needed is somewhat less than that needed for windrows.

- **In-vessel composting.** In-vessel composting takes place in an enclosed container rather than in free-standing piles. Some proprietary systems are available. Each provides for some type of combining, size reducing, and mixing of the composting mass and monitoring of temperature, moisture, and nutrient levels, which result in increased throughput, odor control, and consistent product quality. These systems have high equipment costs, but generally require less land than windrow systems. Most in-vessel systems still require some form of windrow composting or aerated static piles to achieve a thoroughly stabilized product.

Consistency with Local Conditions. Yard debris composting is consistent with existing Yolo County policies. The Yolo County Solid Waste Management Plan (1989 Revision) objectives identify the need for conservation of natural resources and energy as well as recovery of resources from solid waste. The infrastructure for a privately run facility is already in place at YCCL.

Institutional Barriers to Implementation. The citing or expansion of yard debris composting facilities are subject to state and local regulatory agencies governing water quality management, solid waste disposal, air quality, and public health. All permits are probably achievable for the YCCL site.

Cost. Development and operation costs depend largely on the level of technology chosen and on how the yard debris are collected. According to a recent study[3], composting programs in the United States encounter costs that vary from $10 to $100 per ton of incoming yard debris, with higher costs generally associated with programs providing collection services. These costs can often be offset at least in part by product revenue.

Market Conditions. Soil amendments are widely sold to households, landscapers, and other customers. AB 1322 requires that State agencies, including the Department of General Services, Caltrans, and the Department of Forestry and Fire Protection, use yard debris compost. A market analysis for Yolo County was performed for yard debris compost as part of the Resource Recovery Alternatives Analysis for Yolo County. The analysis is contained in Appendix B. Yolo County has gained approval for a demonstration project which allows them to use chipped green waste as an alternative daily cover. This could also provide a steady end use for the compost material.

5.3.1.2 Anaerobic Digestion

In the anaerobic digestion process, organic materials are transformed by bacteria into methane, carbon dioxide, and a watery sludge residue. The emphasis is on producing a marketable energy source (methane) rather than a soil amendment. In 1989 and 1990, Yolo County submitted a proposal for a primary research grant from the California Energy Commission (CEC). The county proposed to study controlled anaerobic digestion of green waste at the YCCL site. The proposal was denied each year. Yolo County reviewed and revised the application for

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[3] Glenn, Biocycle (September 1990).

resubmission in November 1991. The proposal was accepted by the CEC contingent on match funding by the county.

General Technology Description. Yolo County's anaerobic digestion proposal describes the "enhanced landfill digester" concept for the processing of mixed municipal solid waste. In general, anaerobic digestion is accomplished in four distinct stages:

- Preprocessing, in which the incoming waste is sorted to isolate the organic materials to be digested and reduced in size to expedite the digestion process

- Blending the material with water and other chemicals to enhance and stabilize the chemical composition

- Entering the digester, chamber, or cell where the material reacts with the anaerobic bacteria, producing the gas mixture

- Separating the gas, a mixture of carbon dioxide and methane (and also some hydrogen sulfide), into clean methane for burning and carbon dioxide that can be recovered as dry ice

The remaining aqueous sludge is dewatered, with the effluent being recycled and sent to a landfill or possibly used as compost. Several anaerobic digesters have operated successfully in the United States.

Consistency With Local Conditions. Anaerobic digestion is consistent with Yolo County policies outlined in the County Solid Waste Management Plan (1989 Revision) regarding observation of natural resources, resource recovery from solid waste, and diversion from landfills. The county has pursued anaerobic digestion through facility grant applications to the CEC Energy Technology Advancement Program.

Institutional Barriers to Implementation. The cost of pursuing anaerobic digestion presents a barrier. If the county cannot obtain match funding for the grant from the Energy Technology Advancement Program, it is unlikely the county will pursue this option. Also, anaerobic digestion would be subject to state and local regulatory agencies governing waste disposal air quality, water management, and public health.

Cost. Cost associated with developing and operating an anaerobic composting system is typically high. A 100 ton per day facility may reduce the overall waste volume by only 12 percent, although capital costs for a state of the art facility may be as high as $20 million. Yolo County's proposal is for a relatively less-sophisticated operation that could have substantially lower costs to operate. Early start-up and pilot project costs may be offset by obtaining public funding. Costs may be further offset by sales of methane.

Market Conditions. Although markets for compost in Yolo County are generally available, compost generated by anaerobic digesters has not been widely developed at larger than pilot scale. Operating experiences with a final product is uncertain at best. The use of alternative daily cover at the landfill may provide a steady end use for the compost material. Yolo County currently operates a landfill gas recovery program at the YCCL site to produce electricity. This is the extent of the market for gas produced by anaerobic digestion.

5.3.1.3 MSW Composting

Although relatively uncommon in the United States, MSW composting is widely used for solid waste stabilization and disposal in other parts of the world. Most systems are proprietary and are associated with materials recovery, in fact successful MSW composting presupposes an existing recycling infrastructure (i.e., curbside collection). MSW composting requires high levels of mechanization and control systems, and thus is suited primarily to large volumes of waste. In assessing the potential for this type of program, consideration must be given to the diverse waste stream, land requirements (5 to 20 acres or more depending on scale and technology employed), cost, and environmental issues related to residuals disposal and use of the end-product. MSW composting can be used to reduce waste volume, with the end-product

destined for landfilling or use as soil conditioner or mulch, depending on compost quality and local environmental considerations.

General Technology Description. The three steps for MSW composting are:

- Preprocessing - includes reducing the particle size of the waste by shredding or grinding, materials separation to eliminate noncompostables, and mixing to produce a homogeneous composting mass

- Composting - uses combinations of in-vessel, static pile, and windrow systems, both aerobic and anaerobic

- Postprocessing - screening and curing to produce the finished product.

Consistency with Local Conditions. MSW composting is generally consistent with the policies set forth in the County Solid Waste Management Plan (1989 Revision) regarding conserving natural resources, resource recovery from solid waste, and diversion of waste from landfills. The alternative would, however, require new major facility development in the county.

Institutional Barriers to Implementation. Due to the capital costs of a materials recovery facility, MSW composting would likely require a countywide or regional facility, requiring agreements with all member cities. None of the four cities in Yolo County are pursuing this option as part of their AB 939 planning process, thus presenting a barrier. The siting and construction of a MSW composting facility would be subject to county planning and zoning ordinances. No other explicit barriers to implementation were identified.

Cost. Although capital and operating costs will depend on the type and scale of the program selected, MSW composting typically costs between $40 and $80 per incoming ton and produces residuals that must be landfilled. Most of the available systems are offered by vendors are integrated with materials recovery facilities and use proprietary technologies. Systems providing

for highest compost quality often recover the least amount of material as compost and generally larger fractions of recyclables.

Market Conditions. The marketability of MSW compost is questionable. The material has deficiencies, both real and perceived, relative to yard debris compost. Under AB 939, the potential abundance of yard debris compost produced by California's cities and counties may limit end uses of MSW compost to certain municipal projects and landfill cover.

5.3.2 Evaluation of Composting Alternatives

Section 5.3.1 described the alternatives under consideration for composting the organic components of the unincorporated county's waste stream. The next phase of the planning process is prioritizing the options to determine the most appropriate composting activities for the unincorporated county.

The evaluation and prioritization of preferred composting alternatives employs the evaluation methodology as described in Section 2 of the SRRE. Results of the process are described below. Table 5-2 describes each alternative in a narrative format vis-a-vis 13 criteria combining local concerns and state requirements. Table 5-3 employs a worksheet matrix to numerically score the alternatives based on the 13 criteria and presents the results of the scoring process, ranking the alternatives from most to least preferred.

Results indicate that yard debris composting is the preferred composting alternative for short-term development. Anaerobic digestion scores somewhat lower, but will not be implemented by the county unless the program is funded. The appreciably lower score for MSW composting suggests that it is an area for further feasibility assessment but not immediate implementation for the unincorporated county.

Table 5-2
Composting Alternatives Analysis

CRITERIA	Yard Debris Composting	MSW Composting	Anaerobic Digestion of Organic Waste
1. **Waste diversion potential**	10 - 20 percent; materials collection and space/site allocation are limiting factors.	Excluding material recovery, as much as 50 to 70 percent.	An estimated 8 to 15 percent of the total waste stream, targeting only the organic fraction.
2. **Environmental impact**	Potential for odor, leachate, dust. Minimal and controllable through management.	Potential for odor, particle emissions. Unknown impacts of generated compost material.	Potential for odor, gas migration, leachate and other typical landfill concerns. Controllable through management.
3. **Operating experience**	Hundreds of facilities operating nationwide, from small pilots to large municipal operations. Well demonstrated in the US.	Currently 9 operating facilities in the US. Technology often adapted from other waste streams (ie, sewage sludge).	Operating experience is limited to several pilot-scale programs. Experience is very site-specific.
4. **Conformity with local markets**	Commercial markets limited. Local use in County projects or public giveaway are most likely short-term markets.	There is very little success marketing MSW compost in the US. Some potential for land application. No local markets were identified.	Local markets for methane exist, will likely be processed for electricity at the landfill. Resulting compost quality is unknown.
5. **Compatibility with existing programs in Yolo County**	Some new operations development would be required. Compatible with existing landfill operations.	Could be developed in conjunction with a transfer station; major new facilities would be needed.	Process is similar to landfilling and is thus compatible with existing landfill activities.

Table 5-2
Composting Alternatives Analysis

CRITERIA	Yard Debris Composting	MSW Composting	Anaerobic Digestion of Organic Waste
6. **Capital cost**	$100 - $500,000 for typical facility Major cost is for size reduction equipment.	Costs for facilities is typically high, in the $20 million range.	Capital costs are fairly low, assuming an existing landfill.
7. **Cost effectiveness**	$10 - $50/ton of incoming yard debris.	Larger facilities may approach $100/ton depending on material marketability.	Based on proposal estimates, $4/acre in addition to landfill cost ($20/ton).
8. **Long-term costs of environmental impacts**	Environmental impact is negligible. No known long-term cost.	Potential concerns with compost end product used over long-term.	Impacts are similar to a landfill; potential for increased leachate and degradation, generally manageable.
9. **Economic opportunities for public/private partnership**	Private sector could operate under contract agreement with County. Outstanding opportunity for public/private partnership.	Some opportunity as several proprietary systems available. Some costs to public sector offset by private developer.	Good opportunity for partnership. Grant money available for pilot projects.
10. **Conformity with state hierarchy**	Consistent with second level of hierarchy.	Consistent with second level of hierarchy.	Uncertain position within the State's hierarchy.[4]

[4] Assembly Bill No. 1820 (Sher, 1990) does not particularly address anaerobic digestion; the CIWMB will need to judge whether it will be considered composting, as it is the result of controlled biological decomposition, or, transformation, as it converts solid wastes for the purposes of energy recovery.

Table 5-2
Composting Alternatives Analysis

CRITERIA	Yard Debris Composting	MSW Composting	Anaerobic Digestion of Organic Waste
11. **Adaptability to changes in County activities and needs**	Programs adaptability is limited to capabilities of processing equipment, and material type.	Processing facility could be designed to handle varying waste streams, limited by system design.	Full-scale program probably not very adaptable, as material is processed in batch form.
12. **Ease of implementation**	Start up is six months to a year or more. Projects often phased to increase volume over time.	High capital costs require complex financial planning and process review; may take 3 to 5 years.	Developing full-scale operation could require 3 to 5 years.
13. **Private sector participation**	Good opportunities for private sector participation in development and operation.	There is a large opportunity for private participation; in design, marketing, financing, and operation.	Potentially large opportunity for private sector participation; in design, marketing, financing, and operation.

Table 5-3
Composting Alternatives Raw Score

CRITERIA	WEIGHTING FACTOR	Yard Debris Composting		MSW Composting		Anaerobic Digestion	
1. Waste diversion potential	14.5	2	(29.0)	3	(43.5)	2	(29.0)
2. Environmental impacts	8.3	2	(16.6)	1	(8.3)	2	(16.6)
3. Operating experience	10.1	3	(30.3)	2	(20.2)	1	(10.1)
4. Conformity with local markets	5.0	3	(15.0)	1	(5.0)	3	(15.0)
5. Compatibility with existing programs	8.2	2	(16.4)	1	(8.2)	2	(16.4)
6. Capital cost	6.1	2	(12.2)	1	(6.1)	3	(18.3)
7. Cost effectiveness	9.5	2	(19.0)	2	(19.0)	3	(28.5)
8. Long-term costs of environmental impacts	7.4	3	(22.2)	2	(14.8)	2	(14.8)
9. Opportunity for public/private partnership	4.8	3	(14.4)	3	(14.4)	2	(9.6)
10. Conformity with state hierarchy	7.9	2	(15.8)	2	(15.8)	2	(15.8)
11. Adaptability to changes in County activities and needs	6.9	2	(13.8)	2	(13.8)	1	(6.9)
12. Ease of implementation	7.2	2	(14.4)	1	(7.2)	1	(7.2)
13. Private sector participation	4.1	3	(12.3)	3	(12.3)	3	(12.3)
TOTAL:			283.40		240.60		252.50

5.4 COMPOSTING PROGRAM SELECTION

This section presents the results of the evaluation process by identifying, justifying, and providing further detail on the selected composting options for Yolo County. Selection of composting programs for U.C. Davis can be found in Appendix E.

5.4.1 Identification and Justification of Selections

5.4.1.1 Yard Debris Composting

Results of the analysis comparing waste management strategies led to the selection of yard debris composting as an important part of the unincorporated county's waste diversion efforts. Specifically, the program involves working with Valley By-Products to expand their existing composting and wood utilization program to efficiently and effectively target more incoming yard/wood debris for diversion to their composting operation. The county will assist Valley By-Products in the permitting and regulatory process, as well as develop strategies to increase the amount of organic material diverted from the unincorporated areas. One of the ways the county is considering doing this is by locating dedicated drop-boxes at the Esparto Convenience Center, YCCL site, and at other appropriate locations in the unincorporated area. This program will be coordinated with the wood chipping program discussed further in the Special Wastes Component.

Yard debris composting was selected because it is the most effective and viable means of diverting organic material for the unincorporated areas. Because yard debris and wood comprises approximately 12 percent (by weight) of the disposed waste stream, a composting program can account for a significant share of the diversion goals. Few or no consequences on waste type generation or use is expected from the initiation of this program. The feedstock material for this program will be source separated yard waste materials. In contrast, the anaerobic digestion operation (described below) will use mixed municipal solid waste placed into-landfill cells as its feedstock. Therefore, the programs will not be competing for the same waste stream materials.

5.4.1.2 Anaerobic Digestion

Anaerobic digestion is a tentatively selected program for the unincorporated county. It was selected due to its score, and the availability of local expertise. Few or no consequences on waste type generation or use is expected from the initiation of this program. The feedstock material for this program will be source separated yard waste materials. It will be implemented based on the ability of the county to secure funding from an outside source (CEC, or other). Because of the relatively unproven applicability of the "enhanced landfill" approach, it will be pursued on a pilot basis (if funded). Results of the pilot study may lead to the development of a full-scale operation in the medium-term planning period.

Due to the inexperience with anaerobic digesters it is unclear how diversion credit will be apportioned to the substantial volumes of material that may be processed using the "enhanced landfill" process. Given the nature of the tentative selection, the county will not assume future diversion credit for the program at this time.

5.4.1.3 MSW Composting

There are relatively few operating MSW composting systems in the United States. The technology involved is capital-intensive, and end uses for the product are limited. While rising landfill costs may make MSW composting a cost-effective means of saving landfill space, its high capital costs, the lack of initiative for this alternative from any of the four incorporated cities in the county, and the lack of sufficiently developed front-end material recovery capability, provide sufficient grounds to exclude MSW composting from further consideration at this time. A feasibility study may be conducted in the medium-term planning period to reassess the potential of MSW composting in Yolo County.

5.4.2 Selected Program Costs

To calculate composting program costs for the unincorporated county several assumptions were made. One assumption is that Valley By-Products will maintain and expand its existing operations at YCCL. The county is relying on Valley By-Products to receive, process, account for, and market all of the unincorporated county's yard debris. The costs for the operation will largely be borne by Valley By-Products. Costs to the county are estimated at approximately $10,000. This includes staff time for administering some aspects of the program, the cost of dedicating collection containers (but not the added cost of hauling them), and costs of public education programs. These costs are summarized in Table 5-4.

5.4.3 Anticipated End Uses for Compost

Yard debris compost. Anticipated end uses for yard debris compost include distribution for a wide range of applications. In the short-term planning period, both county uses (internal markets) and state-mandated uses will be developed[5]. For example, Yolo County is currently operating a demonstration project using chipped green waste as an alternative daily cover. This could provide a steady internal market for the compost produced. Private uses (external markets) will be developed commensurate with the quality of the finished product and the specifications required, based upon the data obtained in a thorough marketing study. Certain materials (such as large prunings and stumps, and eucalyptus wastes) may be excluded from the composting process. However, other uses are planned to be developed as needed to qualify these materials for diversion credit through recycling (i.e., selling stumps and large prunings for firewood, chipping brush with eucalyptus waste to use as mulch.). Marketing efforts for compost and mulch will be directed toward external markets. As discussed in Section 5.6, if initial external markets prove insufficient, more specific marketing targets are planned to be developed and the program will be modified to achieve the needed specifications. Further marketing contingency plans include greater development of potential internal markets.

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[5]. SB 1322 requires that state agencies, including the Department of General Services, CalTrans and the Department of Forestry and Fire Protection use yard debris compost.

Table 5-4
Cost Assumptions for the Composting Program

OPERATING COSTS:

Labor	$5,824	(1)
Maintenance/Fuel	$0	
Utilities	$0	
Materials/Supplies	$2,000	(2)
Equipment Replacement	$0	
Disposal/Transport	$0	
Promotion	$2,000	(3)
Insurance	$0	
Subtotal	$9,824	
Misc/Contingency 20%	$1,965	
Total	$11,789	

(County incurred costs only, costs to be incurred by private sector are not included)

ASSUMPTIONS:

(1) Includes 10 percent of one County staff person @ $28 per hour including benefits.
(2) Signage for the landfill and transfer stations.
(3) Includes bill inserts and other announcements.

Anaerobic compost and associated products. The "enhanced landfill" process creates several by-products, including methane, carbon dioxide, and a watery sludge residue. The emphasis is on producing a marketable energy source (methane) rather than a soil amendment. Methane could be processed using the existing landfill gas recovery system, to produce electricity. Some anaerobic digesters in other states have recovered the carbon dioxide fraction as dry ice. The sludge residue would likely be difficult to recover, and may remain landfilled, or be used as an alternative daily cover.

5.4.4 Required Facilities Development/Expansion

To a great degree, facility requirements have been met. The Valley By-Products operation will need to be expanded in order to accommodate increased composting activity. Siting the operation on the existing landfill presents many positive benefits. The site is well-buffered from residential areas due to its remote location. There is more than sufficient land available for a full-scale composting project. The scalehouse, and the ability to handle substantial truck traffic already exist. Also, haulers and residents are familiar with the site's location. The site has an existing solid waste facilities permit, and is mentioned in the Report of Facility Information, August 1992. The composting operation will need to be reviewed by the CIWMB, the Regional Water Quality Board, the Yolo-Solano Air Pollution Control District and the County Environmental Health Division.

Increasing the amount of clean yard debris available to the site will require that facilities are developed to allow users of the transfer station and other public drop-off areas to segregate their yard debris. This would require dedicating certain debris boxes for yard debris, and providing signage and some public education effort.

5.4.5 Estimates of Anticipated Diversions

The current amount of yard debris, manure, and wood waste generated in the unincorporated portions of Yolo County (excluding U.C. Davis) is approximately 1,900 TPY. Operations at Valley By-Products are under way. Although it is anticipated that the amount of material

currently processed is low, eventually the composting program should be capturing 20 percent of the total yard debris, manure, and wood waste available in the unincorporated area by 1995. This will be increased to 70 percent of all such material by 2000. Table 5-5 summarizes anticipated future diversion for both the unincorporated county and U.C. Davis composting programs.

Table 5-5A

Anticipated Future Diversion for Unincorporated County

Material	1995		2000	
	Tons	Percent	Tons	Percent
Grass, leaves	72	20	162	40
Prunings	37	20	84	40
Manure	1	20	2	40
Wood waste	330	20	1,480	80
Total	440		1,728	

Table 5-5B

Anticipated Future Diversion for U.C. Davis in Tons per Year (TPY)

Material	1995	2000
Manure	3,187	5,754
Wood waste	0	755
Total	3,187	6,509

5.5 COMPOSTING PROGRAM IMPLEMENTATION

5.5.1 Responsible Entities

The Department of Public Works and Transportation will be responsible for overall decision-making, coordination with Valley By-Products and other jurisdictions (as appropriate), and guidance. Valley By-Products will be responsible for development and day-to-day operation of the composting program. Responsible entities for the U.C. Davis composting programs are discussed in Appendix E.

5.5.2 Required Tasks

For yard debris composting, the short-term planning period will concentrate on expanding existing composting operations at YCCL and increasing the amount incoming yard debris to the facility. Required tasks for U.C. Davis composting are discussed in Appendix E.

Yard Debris Composting (Short-Term)

- Continue demonstration project using chipped green waste as an alternative daily cover at the landfill
- Provide support to Valley By-Products for permit and review process
- Provide dedicated roll-off containers for yard debris at the Esparto Transfer station
- Stratify landfill gate fees and provide incentives for diverting yard debris. This may include classifying larger prunings and stumps as "bulky wastes" thus incurring higher costs to the haulers who choose not to haul them to Valley By-Products

- Determine facility needs to accommodate expansion of Valley By-Products operation

- Secure/develop local markets and end-uses for compost products

- Expand and improve the program on a continuing basis. Incorporate increasing amounts of yard debris into the program on an ongoing basis

- Monitor the program on a continuous basis

Yard Debris Composting (Medium-term)

- Continue technical assistance to Valley By-Products, and potential users, if needed

- Develop pilot scale tests of new materials (i.e, sewage sludge, manure, food scraps etc.)

Anaerobic Digestion (Short-term)

- Continue exploring public funding initiatives

- As funding is received, permit pilot demonstration project

- Implement pilot project

Anaerobic Digestion (Medium-term)

- Based on the results of the pilot study conducted in the short-term (if funded), develop and modify process for scaled up operation

MSW Composting (Medium-term)

- Review MSW composting as a means to expand the composting program at the landfill.

5.5.3 Implementation Summary

Table 5-6 presents a summary of composting program tasks, including costs, and timing. Implementation of composting programs at U.C. Davis is discussed in Appendix E.

Table 5-6
Summary of Composting Programs
Implementation for the Unincorporated Areas of Yolo County

Short-Term Tasks (1991-1995)	Schedule	Cost
Yard Debris Composting		Annual cost $10,000
• Apply for demonstration project allowing chipped green waste to be used as an alternative daily cover at the landfill.	January 1992	(see Table 5-4)
• Provide support to Valley By-Products for permitting and review process.	January 1992; ongoing	
• Provide dedicated roll-off containers at the Esparto transfer station	September 1992	
• Stratify landfill gate fees and provide incentives for diverting yard debris	October 1992	
• Determine facility needs to accommodate expansion of Valley By-Products operation.	January - March 1993	
• Expand and improve the program on a continuing basis.	September 1993; ongoing	
• Monitor the program on a continuing basis.	January 1994; ongoing	
Anaerobic Digestion		
• Continue to explore public funding initiatives	Ongoing	
• As funding is approved, scope out pilot demonstration project goals and needs.	As funding is available	

Table 5-6
Summary of Composting Programs
Implementation for the Unincorporated Areas of Yolo County

Medium-Term Tasks (1995-2000)	Schedule	Cost
Yard Debris Composting		
• Continue technical assistance to Valley By-Products	Ongoing	
• Develop pilot scale tests of new feedstock materials (i.e., sewage sludge, manure, food scraps)	January 1995	
Anaerobic Digestion		
• Based on the results of the pilot study conducted in the short-term, develop and modify process for scaled up operation.	As scheduled by grant	
MSW Composting		
• Review MSW composting as a means to expand composting of the remaining organic fraction.	July 1995	

5.6 MONITORING AND EVALUATION

5.6.1 Methods to Quantify and Monitor Achievement of Composting Program Objectives

Composting program monitoring and evaluation have already begun with the Solid Waste Generation Study carried out in preparation of this SRRE. This study has determined the total amount of yard debris generated within the unincorporated area, and the estimated fraction of yard debris that is suitable for composting. These figures form the basis for composting program objectives.

The composting program will incorporate ongoing monitoring, evaluation, and adjustment, in order to improve the program on a continuous basis. Program monitoring will involve keeping records of number of tons and/or cubic yards of material accepted, processed, and distributed or sold at the compost site. Records will also be kept of any material rejected for composting (e.g., because of contamination with other wastes), and any finished material remaining in extended storage or disposed of for any reason as solid waste. These figures will be compared with information on total tons of MSW disposed, and on source reduction of yard debris, in order to determine overall impact of yard debris composting on the unincorporated area's waste stream.

5.6.2 Criteria for Evaluating Program Effectiveness

The criteria Yolo County plans to employ to determine the composting program's effectiveness are listed below.

1. Were anticipated diversion objectives attained? The composting program will be phased-in over the short-term and medium-term planning periods, starting with a pilot project. Expected diversion rates to be reached at the end of the short-term and medium-term planning periods are presented as objectives in Section 5.1.

2. Did responsible entities execute required tasks? Responsible entities are described in Section 5.5. The primary county agency responsible for the composting program is the Department of Public Works and Transportation.

3. Were tasks implemented on schedule? Timing of required tasks is presented in Section 5.5.

4. Did the targeted sector(s) participate as anticipated? Meeting program objectives will depend on achieving adequate levels of participation by targeted sectors (i.e., residential, commercial, industrial and self-haul sectors).

5. Was recovered compost material successfully marketed/used? A successful program means disposition of all finished compost, mulch, and related products through identified internal and external markets.

6. Were all activities executed in an environmentally sound manner? These requirements include avoiding or eliminating vector problems, nuisance odors, dust, run-off from the compost site, and any other risks to health or the environment.

5.6.3 Parties Responsible for Program Monitoring, Evaluation, and Reporting

Daily record keeping at the compost site will be the responsibility of the Valley By-Products. Data will include types and amount of material taken in and composted, chipped, transformed or disposed by jurisdiction. Data analysis, program evaluation, and reporting of program effectiveness will be performed by the Department of Public Works and Transportation.

5.6.4 Funding Requirements

Monitoring and evaluating the composting program will require approximately 10 percent of county staff person time (approximately $5,800).

5.6.5 Contingency Measures

Unforeseen circumstances may cause the composting program to fail to meet one or more of the program criteria described in Section 5.6.2. If program monitoring and evaluation show that program criteria are not being met, or diversion objectives are not being attained, the county plans to consider implementation of appropriate contingency measures described below.

1. Were anticipated diversion objectives attained? If program monitoring indicates a shortfall in yard debris diversion that is due to programmatic problems (i.e., not due to reduced yard debris generation caused by drought or source reduction), the

county will evaluate the program in terms of applicable program criteria. These criteria support meeting the diversion objectives. The county will also adopt contingency measures specific to those criteria. Corrective steps specific to meeting diversion objectives include:

- Visual inspection of received loads and targeted sorting studies as needed to determine the source(s) of the diversion shortfall

- Program adjustments to increase diversion rates, depending on the results of the above analysis (including changes directed to target generators, discussed below relative to the participation criterion)

- Accelerated program expansion to include additional waste streams and other compostable materials

- Revision of composting objectives to reflect more realistic diversion potentials

2. Did responsible entities execute required tasks? Program analysis may indicate that one or more responsible agencies has failed to carry out assigned program tasks. Contingency measures to correct this situation include:

   - Examination of program staffing, including number of assigned county employees, job descriptions, and assignments

   - Examination of coordination among county agencies, and correction of any problems through program restructuring and clarification of roles and authority

   - Analysis and improvement of program funding, in terms of sufficiency and efficient utilization of funds.

3. Were tasks implemented on schedule? If program monitoring demonstrates delays in completion of one or more tasks, the following step in addition to those previously described under Subsection 2, (above) will be considered:

- The schedule will be examined, and if needed, adjusted in order to reflect more realistic timing. Schedule changes impacting timely meeting of diversion objectives will be considered only if all other means of program improvement are exhausted, including compensatory increases in source reduction and waste diversion programs discussed in other sections of this document.

4. Did targeted sectors (i.e., residential, commercial, industrial, and self-haul generators) participate in the anticipated manner? If indicators demonstrate insufficient participation, the following measures will be considered:

- Target sectors will be surveyed to determine the reasons for insufficient program participation

- Depending on the survey results, the composting program will be adjusted to encourage increased participation. Measures that may be employed include additional public education, changes in collection methods to increase convenience to Yolo County residents, institutions, and businesses, and changes in waste collection and disposal fee structures.

5. Were recovered materials successfully marketed/used? If the compost program encounters difficulties in finding sufficient end-uses for finished products, the following steps will be considered:

- Targeted surveys of internal and external markets will be performed to identify the reasons for market/end use inadequacy, such as: lack of awareness of product availability and uses; distribution methods that may

be inconvenient to customers; insufficient product quality; or need to develop a broader product line, such as blended soils, animal bedding, etc. Survey efforts will be geared primarily towards external markets.

- Depending on survey results, changes in the composting process and product delivery system will be adopted. These could include enhancement of the nutrient content of the product; greater advertising efforts, such as demonstration sites; identification of and expansion into new markets and product lines; technical assistance to potential commercial users; and new delivery systems, such as bagging for sale in the retail market.

- If external markets remain inadequate, other avenues for expansion of internal markets will be employed. These may include additional use on parks and other county property, roadside improvements, and land reclamation.

- If attempts at securing a use of chipped green waste as an alternative daily cover fail, other internal markets will be explored, such as YCCL landscaping and reclamation projects, and public works projects.

6. Were all activities executed in an environmentally sound manner? If the composting program encounters vector problems, nuisance odors, dust, runoff from the compost site, or any other risks to health or the environment, the following measures will be adopted as needed:

- Incoming materials will be inspected for any materials contributing to environmental problems. Inappropriate materials will be rejected. If the presence of such materials is widespread, public education efforts will be directed towards a generalized solution. If a limited number of generators are found to contribute to the problem, they will be informed individually

of their responsibilities. If necessary, legislative and regulatory action will be employed to eliminate problem materials.

- The compost site will be examined for inadequate drainage, weather factors such as wind velocity, and other physical factors. If possible, corrections will be made to the existing site via grading, paving, construction of drainage lines to treatment facilities, etc. If problems inherent to the site cannot be surmounted, an alternate site will be identified, or alternate composting methods, such as an in-vessel system, will be explored.

- Compost site operations will be examined and necessary corrections made. Vector control may be improved through turning of the piles, moisture and temperature adjustments, and trapping. Nuisance odors are usually corrected through improved aeration. Dust may be controlled though proper handling of materials, water sprays, and establishment of windbreaks.

SECTION 6

SPECIAL WASTE COMPONENT

SECTION 6
SPECIAL WASTE COMPONENT

The Special Waste Component examines a selected list of wastes that require special handling and disposal. Special waste is defined by the California Integrated Waste Management Board (CIWMB) to include "any hazardous waste listed in section 66740 of Title 22 of the California Code of Regulations, or any waste that 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." In addition, special waste includes any waste that at its source of generation physical, chemical, or biological conditions require special handling or disposal considerations. The special wastes discussed include agricultural waste, asbestos, ash, auto bodies, shredder waste, construction and demolition debris, pesticide containers, sewage sludge, industrial sludge, tires, and white goods. The intent of this component is to ensure proper handling, reuse, and long-term disposal of these wastes.

6.1 OBJECTIVES

Based on the results of the Solid Waste Generation Study (SWGS), waste diversion objectives were developed for selected special wastes. Covering the short-term (1991 through 1995) and medium-term (1995 through 2000) planning periods, the objectives identify targeted diversion tonnages for the unincorporated area of Yolo County based on criteria that include the weight and hazardous nature of the materials. Specific expected diversion rates by waste type and generator may be found on Table 6-6 in section 6.4.3. The priority waste types for diversion are inerts, wood, tires, white goods, and triple-rinsed pesticide containers. The overall special waste program objectives are:

- To reduce the unincorporated county total waste stream by 9.0 percent by January 1, 1995 by diverting 3,390 tons per year of special wastes.

- To reduce the unincorporated county total waste stream by 8.7 percent by January 1, 2000 by diverting 3,570 tons per year of special wastes.

- To reduce the U.C. Davis total waste stream by 3,630 tons (9.7 percent of total waste stream) by January 1, 1995, and by 4,370 tons (10.6 percent of the total waste stream) by January 1, 2000 by diverting special wastes.

6.2 SPECIAL WASTE PROGRAM EXISTING CONDITIONS

This section briefly describes the existing programs, both public and private, that are operating in the unincorporated area of Yolo County or servicing Yolo County residences or businesses located in the unincorporated area. The diversion rates currently being achieved by these activities for the unincorporated county are assessed as a part of the SWGS.

6.2.1 Current Special Waste Activities

Current special waste programs active in the unincorporated area of Yolo County are identified below for each special waste category. Current special waste programs for U.C. Davis are described in Appendix E.

Agricultural Wastes

Agriculture is a major land use in Yolo County's unincorporated area. Typically, the majority of agricultural wastes are not landfilled. In most cases the wastes are handled at the generation point: tilled back into the ground, composted, used as fillers in animal feeds, or burned in fields. A large local end-user of agricultural wastes is the Woodland Biomass Plant located in Woodland, Yolo County. The plant burns approximately 170,000 tons of material annually to produce energy.

Rice hulls, pits and woody debris are the three most common agricultural wastes in Yolo County. Each is discussed below.

Rice hulls are an agricultural waste currently reused in several applications. For example, they are used as a pressing aid in the wine and fruit juice industries; as filler in formulated animal feeds, livestock, and poultry bedding; as filler for pelletized pesticides; and for metal polishing material. The Rice Growers Association and Pacific International Rice Mills annually ship 120,000 tons of rice hulls to Foster Farms and other large poultry farms all over California. Approximately half (60,000 tons per year) is generated in unincorporated areas of Yolo County. Rice hulls are also diverted to the Woodland Biomass Plant where they are used as fuel.

Peach and olive pits are also agricultural waste used as a fuel at the Woodland Biomass Plant. Prior to use as fuel, the pits are dried. Valley By-Products, a firm located at the YCCL, occasionally provides collection services and manages a pit-drying operation that serves Yolo County.

Some wood debris from agricultural operations is also diverted from the YCCL to Valley By-Products, who chips the wood and sells it to the Woodland Biomass Plant. (See Construction and Demolition Debris section for a detailed description of the wood chipping operation.)

Asbestos

Asbestos is a special waste because it may pose significant public health problems when inhaled or ingested. Friable asbestos (asbestos that can become powder or dust under pressure) is a human carcinogen that primarily affects the lungs. Asbestos-containing material is found in sprayed or troweled-on surfacing materials; insulation on pipes, boilers, and ducts; and in wallboard, ceiling tiles, and floor tiles. Asbestos-containing waste is generated during building maintenance, repair, or renovation operations.

Friable asbestos is classified as hazardous in California because of its hazardous potential. The Environmental Protection Agency (EPA) and the Department of Labor, Occupational Safety and Health Administration (OSHA) have issued regulations for removal, handling and transport, and disposal of asbestos. Asbestos must be handled and transported in sealed nonreturnable containers (i.e., double plastic bags of 6-mil thickness, cartons, drums, or cans) or in closed

vehicles from which fibers cannot escape. Asbestos-containing wastes must be wetted to prevent the fiber from blowing if the container is damaged. Asbestos waste of more than 50 pounds must be manifested and transported by a registered hauler. In California, waste containing asbestos may be disposed in any landfill that has a special permit to accept asbestos waste.

In the unincorporated portion of Yolo County, asbestos wastes are generated in small quantities during demolition or renovation activities. At locations where the asbestos-containing waste is generated, the Yolo County Environmental Health Division of the Health Services Agency inspects the activity to verify that proper handling, storage, waste identification, manifesting, transportation, and disposal guidelines and regulations are met.

In addition, the Yolo-Solano Air Pollution Control Board requires notification and implementation of asbestos control procedures during building renovation and demolition activities. In some cases, an Air Pollution Control Board representative will inspect a project to ensure compliance with state and local regulations. Quarterly, the Air Pollution Control Board reports asbestos related activities to the EPA.

The YCCL does not have a permit to accept asbestos waste; therefore, asbestos generated in the unincorporated areas is transported (by private haulers) outside the county to specially permitted landfills. Landfills accepting asbestos generated in the Yolo County include Anderson Solid Waste in Shasta County, B & J Drop Box Disposal in Solano County, Clipper Creek Landfill in Placer County, Forward, Inc. in San Joaquin County, and the West Contra Costa County Landfill in Contra Costa County.

As part of the load checking at the YCCL, incoming loads of municipal solid waste are visually inspected at the scalehouse to check for asbestos-containing waste. In addition, facility personnel inspect wastes at the public unloading area and the tipping area. If asbestos material is identified or suspected, the hauler will be informed that asbestos disposal is prohibited at the facility. The hauler is then instructed to remove the material from the site and arrange for proper disposal. If the generator is not present at the facility at the time of identification, facility personnel

remove the material and store it in special containers. If possible, the generator is then determined and held responsible for the waste disposal.

Ash

Ash is a residue from combustion of any solid or liquid material. Typically, it is classified as hazardous or designated waste under the California Code of Regulations, Titles 22 and 23 and, therefore is not accepted at the YCCL. In the unincorporated area of Yolo County, two medical waste incinerators generate ash.

A pathological waste incinerator located at the UC Davis wastewater treatment plant burns animals, animal parts, and infectious waste, which produces about 7 tons of ash a year. The ash removed from the pathological incinerator is temporarily stored in trailers until it is landfilled at the UC Davis landfill.

The Sutter Davis Hospital (located outside the city limits of Davis) incinerates its medical wastes on-site. The ash produced contains high levels of metals that classify the material as a hazardous waste according to Titles 22 and 23. The ash must therefore be taken to a specially permitted disposal site. No landfill is authorized to accept this hazardous waste in Yolo County. As a result, the ash is stored in 55-gallon drums until a significant number of drums has accumulated. On an as-needed basis, the hospital arranges for disposal through a private contractor.

No ash is generated in the unincorporated county according to the SWGS; consequently, there is no further discussion about this material.

Auto Bodies

Historically, auto bodies have not been landfilled. A solid market for spare parts and a high demand for ferrous and nonferrous scrap have kept vehicles out of the landfills. Therefore, small-time junk yards have developed into big business and are now called auto dismantlers and recyclers, or auto salvagers. A nationwide computer system links the dismantlers.

Computerized inventories have simplified parts selection for the walk-in customer and have expanded the markets to include nationwide sales.

Scrap yards process auto bodies to recover ferrous and nonferrous (in particular, aluminum) metals. The vehicles are stripped of valuable parts, flattened, and shredded to recover the metals. Vehicles are a major source of the ferrous scrap being recycled today.

Auto bodies are no longer accepted for disposal at the YCCL. Several auto salvaging operations located in the area receive the unwanted vehicles generated in Yolo County. Auto parts are recycled by auto salvagers that sell used auto parts. The remaining stripped auto bodies are transported out of the county and sold to scrap metal operations in Sacramento and the San Francisco Bay Area.

A disposal problem does not exist in Yolo County. Unwanted vehicles are already diverted from the landfill to well-established auto salvaging and scrap metal operations. Because auto parts are currently recycled and the scrap metal from the auto bodies is reclaimed, no reuse or recycling programs will be considered.

Shredder Waste

Shredder waste is the material remaining after metallic articles such as auto bodies, appliances, and sheet metal are shredded. The bulk of shredder waste stems from shredding automobiles and consists of textile fibers, paint remainders, plastic, and rubber, which are all soaked with engine oil. Prior to 1984, shredder waste was considered nonhazardous and was disposed in nonhazardous landfills or was used as fill material. However, these wastes have been identified as generators of toxic leachates, which contaminate the groundwater. In 1984, the California Department of Health Services (DHS) classified this material as a hazardous waste and subsequently granted a variance so the material could be disposed at Class II landfills. Because there were insufficient disposal sites or capacity to accommodate the quantities generated within the state, SB 976 (Bergeson) was passed in 1985 to identify both Class II and Class III landfills that could accept shredder waste.

Further legislation in California (AB 1542) passed in September 1987 (effective February 15, 1988) mandated that DHS cannot prohibit disposal of shredder waste at a Class III landfill, provided the generator can meet standards defined in the law. These standards include a 50 parts per million (ppm) limit on polychlorinated biphenyls (PCB) concentration and determination by DHS that there is no threat to human health or water quality. Amid this legislation, each Regional Water Quality Control Board (RWQCB) still has different regulations concerning auto shredder waste. Officially, this waste is considered hazardous because of the levels of heavy metal content. Thus, the RWQCBs will not permit it to be disposed at nonhazardous landfills.

No shredding operations exist in Yolo County. Automobiles and other metal wastes from Yolo County are transported to Schnitzer Steel in the San Francisco Bay Area. Due to the hazardous nature of shredder waste, YCCL does not accept it and has no plans to do so in the future. Because shredder waste is not generated within the county limits, it is not discussed further in this component.

Construction and Demolition Debris

Construction and demolition debris is considered a special waste because of its bulk and difficulty in handling. It generally includes building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition of pavement, houses, commercial buildings, and other structures. Typical materials in this category include rock, concrete, brick, asphalt, wood, sheet rock, sand, and fines. This plan focuses on these materials: asphalt, concrete, inert solids, and wood debris. These materials make up the majority of unincorporated Yolo County's construction and demolition waste in both weight and volume.

The SWGS identifies asphalt, concrete and wood categories only when the materials are received as "clean", separated loads at the landfill. Otherwise, the materials are mixed in with the tonnage reported in the inert solid and construction/demolition categories. The SWGS did not identify any concrete generation as the material was received as inert solids.

While some recycling of asphalt material does occur, it is difficult to estimate the quantity of asphalt reused and recycled in the county. Asphalt companies under contract with the Department of Public Works and Transportation recycle the uncontaminated (free of dirt and stones) asphalt grindings removed when resurfacing streets. The grindings are hauled to asphalt plants and blended back into new asphalt mixes. The county also uses some asphalt as fill material along roadway shoulders.

Clean loads of asphalt and inerts are used at the YCCL to construct a stable working area and roadways in the winter. The clean loads brought to the YCCL are accepted free of charge.

According to the SWGS, an estimated 1.2 tons of separated asphalt were generated in the unincorporated county in 1990. In addition, a total of 2,845 tons of inert material and 338 tons of construction/demolition debris were also generated. The YCCL winter roads construction program diverted 2,335 tons of inert material in 1990. The balance of the inert solids, and all the asphalt and construction and demolition material, is landfilled.

Pesticide Containers

Pesticide wastes are treated as hazardous waste and must be disposed of in accordance with all applicable requirements of the California Hazardous Waste Control Act and the Federal Resource Conservation and Recovery Act. Pesticide waste concentrates, emulsifiable liquids, wettable powders and dust, and unrinsed pesticide containers are to be disposed of in approved hazardous waste Class I landfills which are authorized to accept the specific waste.

Existing regulations however do allow the disposal of triple-rinsed pesticide containers into Class III landfills. Triple-rinsed pesticide containers are not classified as a hazardous waste under California Code of Regulations, Title 22, Chapter 30, Article 4, Section 6680. Disposal of triple-rinsed containers should be in accordance with California Code of Regulations, Title 3, Sections 6676 through 6684 and Subchapter 3, Article 10, Sections 3138 through 3144. Regulations of the CIWMB do not require separate disposal areas within Class III landfills for triple-rinsed pesticide containers.

By definition, a pesticide container is any container that has held an economic poison such as a spray adjuvant, growth regulator, plant defoliant, repellent, insecticide, fungicide, bactericide, herbicide, rodenticide, nematodocide, or fumigant. The Yolo County Triple-Rinsed Pesticide Container Program deals with these types of containers, from one-half pint to 55 gallons in size. The program was developed by a joint effort and consensus among the Agricultural Commissioner's Office, Yolo County Department of Public Works and Transportation, and the Yolo County Environmental Health Division. The program consists of the following elements:

- Container generators must arrange for an inspection of containers by the county Department of Agriculture prior to disposal at YCCL
- Generators requesting on-site inspections sign an affidavit that the containers designated for inspection have been rinsed in accordance with law
- All potential container dealers and generators have been notified that the YCCL will not accept containers for disposal unless they have been triple-rinsed.

According to the August 1992 Report of Facility Information (RFI), in the nine months between July 1990 and March 1991, 4,225 containers were accepted (countywide) for disposal at YCCL. Currently all rinsed containers are being disposed of at the YCCL. A program to recycle the containers is being proposed in the recycling area of the landfill. Container generators will be asked to crush containers after inspection and deposit then in a roll-off bin at the landfill for recovery.

Sewage Sludge

The majority of the unincorporated county temporarily stores their sewage in septic tanks, which are located at generation points such as homes and small businesses. This sewage is periodically pumped from the tanks and transported in tank trucks directly to the disposal site. Typically, the septic tank sewage is hauled to the YCCL Class II liquid waste impoundment. The sewage sludge is retained in the impoundment until the material has dried; it is then excavated and placed in the landfill.

In the more densely populated areas, residences and businesses may be connected to a sanitary sewer system. Sewage flows through underground pipe networks to sewage treatment plants. Three communities of the unincorporated area of Yolo County (Esparto, Knights Landing, and Madison) have sanitary sewer systems and waste water treatment plants. In addition, small portions of the unincorporated areas adjacent to the cities may be connected to a city sanitary sewer system.

Sludge from the waste water treatment plants located in the unincorporated areas of Yolo County are handled in two ways. Some treatment plants place the sludge in on-site drying beds. When the sludge has dried, the solids are removed and stored on-site. Alternatively, the wastewater is placed in large surface impoundments that are maintained at a minimum depth. Microorganisms in the pond break down the solids. According to treatment facility staff, these microorganisms are so effective that solid waste is not generated with this technique.

The cities of Woodland and Davis both have waste water treatment plants located in the unincorporated county. Material generated by those is facilities is kept on site after processing.

As specified in AB 1820 (Chapter 145, Statutes of 1989) the CIWMB, in consultation with the state water board and the DHS, submitted a report to the Legislature assessing the role of sludge in the waste diversion requirements established under Public Resources Code Section 41780. A report was issued in October 1991 discussing options for sludge management.

Industrial Sludge

Industrial sludge is liquid or semi-liquid waste generated by the agricultural industry, canneries, and other manufacturers. Four disposal methods are employed in Yolo County to handle industrial sludge.

- Sludge resulting from agricultural operations is often managed at the point of generation. The liquid waste is applied to the land under permit from the RWQCB.

- Cannery waste may be used as a feedstock, soil conditioner, or fertilizer.

- Industrial sludge may also be released into public sanitary sewer systems depending on the nature of the waste and location of the generator. Because the flow is small compared to nonindustrial flow, there appears to be no threat of toxic contamination.

- Sludge can be delivered to the YCCL for disposal. These liquid and semi-liquid wastes (with moisture content greater than 50 percent) include slurries of cannery waste and lime sludge. The sludge is transported to the landfill in tanker trucks and placed in the Class II liquid waste impoundment. When all the water has evaporated, the remaining solid material is excavated and placed in the landfill.

Tires

Tires are classified as a special waste because they are difficult to manage and dispose of at the landfill. Tires are known for their handling difficulties, the tire "float" phenomenon, fire hazard potential, and vector problems.

Tires are accepted at the YCCL and stockpiled in the landfill's designated recycling area. Up until August 1991, a tire collection service transported the tires to a shredding operation located in West Sacramento. The shredded tires were then landfilled at a Sacramento County landfill. In August 1991, the shredding operation closed its operations. The county subsequently contracted with Tire Disposal Service (TDS). TDS collects tires for use as an alternative fuel for a Redding, CA facility. A small amount of tires are sent to reuse markets or retreaded at a Sacramento facility.

The SWGS estimates that 15 tons of tires were generated in 1990 in the unincorporated areas of Yolo County.

White Goods

White goods refers to refrigerators, washers, dryers, air conditioners, and other bulky appliances. Landfilling or shredding white goods poses a potential hazard. Electric appliances produced or repaired prior to 1979 contain PCBs in the electrical capacitors. PCBs are a human carcinogen and therefore have been classified as a hazardous waste. In addition, chlorofluorocarbons (CFCs) are in refrigeration and cooling systems. CFCs deplete stratospheric ozone and therefore are a potential hazard.

The SWGS estimates that in 1990 8.5 tons of white goods were disposed of at the YCCL from the unincorporated area of Yolo County. Residences are the primary generator of this waste. In the county, appliances are disposed of three ways:

- The common procedure is for appliance dealers to remove old white goods when installing new items. Some dealers dismantle the old units and sell the metals for scrap value. Other dealers haul them to the landfill for disposal.

- Residents can also directly transport their white goods to the YCCL for landfilling. The YCCL operators place white goods in the landfill without dismantling the capacitors or cooling units. The landfill disposal charge is $5 per piece or $63.75/ton. The county is actively investigating cost-effective, environmentally sound alternatives to this practice, however, none have been identified to date.

- Residents can also contact Goodwill Industries or the Salvation Army who will take, repair, and reuse appliances.

Wood Debris

The SWGS quantifies two categories of wood debris: wood waste and wood. Wood waste is identified as shipments of pallets, and other "chippable" lumber, such as logs greater than 6

inches in diameter. Wood is that fraction consisting of sawdust, treated woods, or wood otherwise "contaminated," such as with paint or adhesives.

Clean loads of wood debris including stumps, branches, pallets, and other woody construction and demolition waste are diverted from the YCCL to Valley By-Products. Wood debris is chipped into small pieces, which are then sold as hog fuel to area power plants. Local markets for hog fuel include the Woodland Biomass Plant and the Ultrapower Rockland Power Plant.

An incentive exists for wood debris generators to deliver clean loads of waste to YCCL: haulers delivering clean loads pay a tipping fee of $8.75 per ton at Valley By-Products, compared to $30.00 per ton at the YCCL. Valley By-Products could potentially divert 25,000 tons of wood debris per year (RFI, August 1992).

According to the SWGS, a total of approximately 1,700 tons of wood debris were generated in unincorporated Yolo County; approximately 43 tons were sent to the Woodland Biomass plant for transformation in 1990.

6.2.2 Quantities Diverted

Based on data obtained from the waste diversion portion of the SWGS, the quantity of special waste diverted from the unincorporated county solid waste stream in 1990 was 2,335 tons comprised entirely of inert solids. Special wastes diversion for U.C. Davis is summarized in Table 6-1.

Table 6-1
Current and Projected Diversion Levels
by Material Type for U.C. Davis

Material	Current	1995	2000
Wood waste	0	0	286
Concrete & asphalt	3,135	3,381	3,571
Ferrous metal	228	251	265
Dead animals (other special waste)	0	0	245
Total	3,363	3,632	4,367

6.2.3 Anticipated Decrease of Activities

Currently no identified special waste programs are expected to decrease or be phased out during the short- or medium-term planning period. County-sponsored diversion and recycling of some special wastes are expected to be enhanced so that existing programs can become more effective in diverting waste or minimizing hazard potential. If a county-sponsored diversion or recycling alternative is phased out or terminated, that decision will be made because the county deemed the alternative not feasible. Feasibility will be based on cost, technical requirements, or time frame for achieving the diversion mandates specified in Public Resources Code Section 41780.

6.3 EVALUATION OF SPECIAL WASTE ALTERNATIVES

The range of special waste diversion alternatives is described below, including general technology description, consistent with local conditions in Yolo County institutional barriers to implementation, cost, and market conditions.

6.3.1 Description of Alternatives

6.3.1.1 Agricultural Waste

No programs are considered because no agricultural wastes were identified in the SWGS for the unincorporated area of Yolo County.

6.3.1.2 Asbestos

Because of the hazardous nature of asbestos, no safe diversion, recycling, or reuse alternatives are currently feasible for Yolo County. Landfilling is the only disposal practice currently employed. The ideal landfill disposal practice is to create a monofill for asbestos-containing waste. A monofill is a specially designated cell of the landfill in which only one type of waste is placed. By isolating the asbestos waste, proper safety measures and handling procedures can be efficiently and effectively implemented. Establishing a monofill at the YCCL has been considered and is discussed in the RFI (August 1992).

6.3.1.3 Construction and Demolition Debris

Asphalt and concrete (as elements of the construction and demolition debris category) have been targeted for development of a diversion and recycling program. These programs will focus on reuse and recycling techniques available.

1. Asphalt

General Technology Description. There are three methods of asphalt recycling:

- Cold recycling takes place at the roadway to be rehabilitated. The existing deteriorated asphalt is removed and ground up. A softening and bonding agent is introduced to produce a new asphalt blend. The mixture is then placed and compacted back on the roadway. This produces a low-quality product, but does

reuse the asphalt and eliminates the transportation costs of hauling the old asphalt to the landfill and trucking new asphalt to the construction site.

- Another cold recycling method produces a higher-quality material. By hauling the deteriorated material off-site to an asphalt batch plant, new aggregate and a binding or softening agent can be added with more mixing and quality control capabilities. The material is then transported to the construction site for placement.

- Hot recycling is performed off-site. Asphalt millings -- small pieces of asphalt produced when grinding the surface of a deteriorated roadway -- or large pieces of asphalt that have been placed in a crusher are taken to a hot-mix asphalt plant. The crushed aggregate is heated to make it more fluid, combined with additional virgin aggregate and asphalt binder, and mixed to produce a new asphalt batch. The process produces a high-quality asphalt subbase or surfacing material.

Yolo County can choose to employ nonfacility options, build an asphalt recycling facility, or employ existing privately operated facilities in the Yolo County area.

Consistency with Local Conditions. Local recycling policy encourages reuse of these materials. The county reuses asphalt as roadway shoulder backing or as construction material for working areas and roads at the landfill. In addition, asphalt grindings are recycled by private contractors. Because of the existing recycling activities and the typical practice of source separation at construction sites, an asphalt diversion and recycling program could be easily incorporated into the existing county and private contractor operations.

Institutional Barriers. No institutional barriers are anticipated. The county roadway work is generally funded through the state and the county uses state construction specifications allowing reuse of asphalt material. Currently state specifications do not encourage or mandate its contractors to reuse or recycle used asphalt; however, AB 1306 (Chapter 1092, Statutes of 1989) requires the state Department of Transportation to revise its construction specifications to encourage the maximum use of recycled materials. The legislation requires the Department to

review and modify all bid specifications for paving materials and base, subbase, and pervious backfill materials using recycled materials. The materials include, but are not limited to, recycled asphalt pavement and crushed concrete subbase. This bill and the specifications developed as a result of its implementation should increase the quantity of construction and demolition debris diverted from landfills and recycled.

Cost. Capital cost for a new asphalt recycling facility capable of crushing and processing asphalt into aggregate for reuse would be approximately $500,000 - $1 million. This cost can be avoided by trucking used asphalt to a private recycling facility.

Market Conditions. The major markets or end users for recycled asphalt include asphalt contractors that reuse clean asphalt shavings in hot mix, asphalt building material companies that accept used asphalt (free of charge) and grind it into a miscellaneous aggregate (which can be used as a subbase material or in hot mix asphalt), and landfill operators that use clean asphalt to stabilize their roads and tipping areas. Many of these markets are currently available in Yolo County.

2. Concrete

General Technical Description. Concrete recovered from utility installation, street repair operations, site demolition, and renovation operations can be recycled. Concrete recycling involves breaking up the concrete, removing any reinforcing steel, crushing and removing embedded steel and asphalt, crushing the remaining concrete again into various sizes depending on the end-user needs, and stockpiling the material prior to resale. The concrete aggregate produced can be used in new concrete mixes or as subbase aggregate. Steel is sold to steel mills for recycling. The county can choose to build a concrete recycling facility or it can truck the used concrete to privately operated facilities in the Yolo County area. The county can continue to use the material for work areas and roadways at the YCCL.

Consistency with Local Conditions. The concrete recycling option is compatible with the county's policy to recycle materials. Clean loads of concrete are used at the YCCL to construct

stable working areas. Because the material can be source separated at construction sites, a concrete diversion and recycling program could be easily incorporated into existing county and private contractor operations.

Institutional Barriers. No institutional barriers are anticipated. Currently, the county uses state construction specifications that do not encourage or mandate its contractors to recycle or reuse concrete; however, AB 1306 will bring about changes. (Refer to the discussion of Institutional Barriers for asphalt.)

Cost. Capital costs for a new concrete recycling facility designed to crush concrete into aggregate for reuse would be approximately $500,000 to $1 million. If the county chooses to haul the old concrete to a private recycling facility, no facility capital costs will be required.

Market Conditions. The major market for used concrete is building materials companies that crush the material into a miscellaneous aggregate. The aggregate is used to produce a subbase material or is sold to concrete batch plants to be used in new mixes of concrete. A major constraint in recycling concrete recovered from construction and demolition debris projects is that the concrete contains steel rebar, which make processing difficult. Building materials companies that were contacted stated that they would not accept used concrete containing rebar. The landfill operators also use clean concrete to stabilize their roads and tipping areas.

6.3.1.4 Tires

Tires have been targeted for diversion activities due to the difficulties and hazards associated with handling tires. Six tire management alternatives are identified and described below.

1. Tire Shredding

General Technology Description. Tire shredding is a mechanical process that slices the tire into 6 to 10 pieces. Tire shredding reduces the volume of the tires, allows for easier handling, and eliminates the tire float problem. After shredding, the tires are landfilled. If shredded into smaller pieces, the shredded tires can be used for fuel (refer to discussion of tire-derived fuel).

Consistency with Local Conditions. Until August 1991, YCCL had contracted with Sac Val (also known as Tri-C) to pick up tires from the YCCL. Tri-C delivered the tires to Consolidated Environmental Industries (CEI) who shredded them, and disposed of the shreds at the Sacramento County landfill. In August 1991, CEI closed its operations. The county has subsequently contracted with Tire Disposal Service for collection and recovery of tires.

Institutional Barriers. Tire shredding is encouraged under AB 1843 (Chapter 974, Statutes of 1989, Brown). The CIWMB will authorize at least one landfill in each region to accept and store shredded tires. The regulations will require that shredded tires be stored in a separate area to allow for their removal at a later date. Although this practice is encouraged by AB 1843, tire shredding does not receive diversion credit under AB 939.

Cost. During the time that Yolo County contracted for tire shredding and disposal, YCCL paid $32.00 per ton for the service.

Market Conditions. No market exists for tires which have been shredded into large pieces.

2. Physical Reuse

General Technology Description. Physical reuse of tires includes direct use of old tires for landscape borders, highway crash barriers, artificial reefs and breakwaters, erosion control, playground materials, dock bumpers, fishing reefs, and other creative, innovative uses.

Consistency with Local Conditions. Although no formalized program exists in the county, this type of reuse is consistent with county recycling policy. This type of recycling will be acceptable provided the operation meets the county's building and planning requirements.

Institutional Barriers. No institutional barriers are anticipated. AB 1843 recommends the physical reuse of tires in the applications listed above.

Cost. Estimated development cost for breakwaters including hauling and installation is as much as $3.00 per tire. Costs for other alternatives are relatively low.

Market Conditions. Established markets are limited. There is some use of tires in playground construction and as crash barriers at gas stations, docks, and high traffic areas. These uses are, however, occasional and unorganized. The markets for tire reuse will require local development.

3. Retreading

General Technology Description. About 10 to 30 percent of old tires can be retreaded for vehicle use. Typically, this practice has been limited to bus, truck, and other large tires. Currently, passenger car retreads are not economically competitive with new, inexpensive, imported tires.

Two processes are used for retreading: mold-cured and precured. In the mold-cured process, uncured tread rubber is applied. The tire is placed in a mold to form the desired tread pattern, and tread rubber is vulcanized. In the precured process, a precured, premolded rubber tread is applied. Retreading facilities are established in the Yolo County area.

Retreading reduces the number of tires entering the waste stream. However, it does generate its own waste, such as rejected casings and rubber buffing. In some cases, the casings go to a landfill, are sold to a tire shredding operation, or go to whole-tire incineration plants. Another by-product is crumb rubber; its uses and markets are described in the following section.

Consistency with Local Conditions. This activity is consistent with county policy to increase and enhance local recycling. County agencies will be required to purchase retreads and procure retread services under AB 4 (Chapter 1094, Statutes of 1989, Eastin). Three percent of the tires collected by TDS at the YCCL are retreaded at a Sacramento facility.

Institutional Barriers. No institutional barriers are anticipated. AB 1843 encourages the development of tire recycling and reuse operations by making grants and loans available. The bill requires state agencies to use recycled tire products. Retreaded tires will be purchased for all state vehicles and retreading services will be obtained for the state's used tires. In addition, EPA guidelines already specify that retreads must be purchased and retread services must be used for old tires if a federal, state, or local agency is purchasing 10,000 or more tires per year and using federal funds.

Cost. Typical production cost per passenger tire, including the cost of a new casing, is about $17.

Market Conditions. The retread market for passenger car tires has declined over the years. The retread business has been faced with increased production costs, inconsistent quality, consumer resistance, marketing problems, and inexpensive new tire prices. The market for truck, airline, bus, taxi, and off-road tires has been more consistent. The retreading of the larger tires is more successful because the price of a new tire is significantly higher than a retread.

EPA guidelines and AB 1843 may increase the retread demand for both passenger and other tire types through their mandatory purchasing and disposal policies.

4. Crumb Rubber

General Technology Description. In this process, scrap rubber is broken into small particles by mechanical or cryogenic embrittlement. In the case of cryogenic processing, tires are frozen to extremely low temperatures (-20° F or less), smashed into smaller pieces, and separated into rubber, fiber, and wire.

Crumb rubber can be used for sports, recreational, and feedlot surfaces; soil improvements; and oil spill clean-up. It can replace up to 50 percent of the virgin rubber needed to make carpet backing, door mats, friction-breaking material, roofing adhesives, car underseals and other protective coatings, and new rubber products. The practice of using crumb rubber to make rubberized asphalt, a roadway paving material, is generating much interest.

The county can choose to build a crumb rubber facility to handle the old tires or it can haul the tires to a privately operated facility when available.

Consistency with Local Conditions. Although not currently generated or used in the county, crumb rubber applications would generally be in accordance with county recycling and reuse policy.

Institutional Barriers. No institutional barriers are anticipated. AB 939 and AB 1843 both encourage implementing this type of recycling and diversion. EPA guidelines advocate the use of crumb rubber to produce rubberized asphalt. Furthermore, AB 1306 requires the Department of Transportation in consultation with the CIWMB to modify all bid specifications for paving and other related materials used in state contracts to maximize use of recycled materials.

Cost. The capital costs for developing of a mechanical processing facility to generate crumb rubber would be between $500,000 and $1 million, depending on the size of the operation. Cryogenic processing is very expensive ($1 million to $10 million) due to the high cost of freezing the tires.

If the county chooses to haul tires to a private crumb rubber facility, no facility capital costs would be required. At this time, no such facilities have been identified in the Yolo County area, however, a private facility may be developed in nearby Sonoma County.

Market Conditions. The total national market for crumb rubber is 60 to 80 million pounds per year, or approximately 3 million to 4 million tires. This demand consumes less than 2 percent of the annual scrap tire generation.

This market has experienced little growth over the past 5 years. Chemical variability, performance inconsistency, and high application costs have limited market development. Furthermore, the virgin material costs are relatively low. As a result, crumb rubber markets would require development in the Yolo County area.

Rubberized asphalt is a developing market. Applications of asphalt are being tested nationwide. EPA guidelines and AB 1306 are encouraging the use of rubberized asphalt for federal, state, and local roads.

5. Tire-Derived Fuel

General Technology Description. In this process whole tires are shredded into small chips (about 2 square inches) for use as a fuel supplement. Tire rubber has a high energy value (approximately 15,000 BTU per pound); therefore, the chips are burned for fuel. The tire-derived-fuel (TDF) shreds are used as a fuel supplement at pulp, paper, lumber, cement, and other heavy industries. When blending fuel, tire chips can be substituted for as much as 10 percent of the existing fuel supply. Incorporating rubber into the fuel supply creates no additional, significant emission or odor problems. Specialized fuel-metering systems can assure environmental conformity.

Using shredded tires for supplemental fuel has been successful for several operations. Waste Recovery, Inc., the world's largest tire-derived fuel producer with tire shredding plants in

Oregon, Texas, and Georgia, charges a tipping fee to tire suppliers and then sells its products to power plants, paper mills, cement producers, and lumber mills.

The county can choose to build a tire shredding facility to handle the old tires, or it can haul the tires to privately operated facilities in the area.

Consistency with Local Conditions. The majority of Yolo County tires are currently hauled by TDS to a Redding, CA facility for use as an alternative fuel.

Institutional Barriers. Waste-to-energy operations have a lower priority in the state waste management hierarchy. Under AB 939, tire-derived fuel applications receive no diversion credit during the short-term.

AB 1843 describes future activities that may affect the tire-derived fuel industry. The CIWMB, in conjunction with the state Air Resources Board and the state Energy and Conservation Commission, will submit a report to the state Legislature on or before December 1, 1991, addressing the feasibility of using tire waste as a fuel supplement for cement kilns, lumber operations, and other industrial processors. The report will include an assessment of air quality effects, identification of major obstacles of waste tires as a fuel supplement, and, if appropriate, recommendations to encourage greater use of waste tires as fuel supplements.

In addition, AB 1843 required the CIWMB, in consultation with the state Fire Marshal and the DHS, to issue emergency regulations establishing procedures and requirements necessary to obtain a major waste tire facility permit. The regulations are now in effect.

Cost. YCCL currently changes a drop-off fee of $80 per ton (bulk rate) to cover the cost of tire collection and disposal through TDF.

Market Conditions. The high energy value of rubber, high product quality, and cost efficiency are the reasons for tire-derived fuel success. The market is potentially large; customers include

paper, lumber, cement, and other heavy "boiler and kiln" industries. Yolo County markets will need to be investigated.

6. Whole-Tire Incineration

General Technology Description. In this process, whole-tires are used as the sole-source of fuel for an incinerated plant that produces steam and electricity. The tires are loaded by conveyor into a large boiler and burned at temperatures between 2,000°F and 2,500°F. The heat of the incineration heats water flowing through the boiler walls. The hot water produces high-pressure steam that powers a turbine generator, which produces electricity that is sold to local utilities or industrial users. Slag, the solid material that remains in the boiler, is about 95 percent ferrous metal (the bead wire and steel belts). The slag can be used as a road-building material or as an additive in cement.

Gases produced during incineration go through a series of filters that remove particulates. The particles contain a high level of zinc and are sold to smelter operations for reclamation. The gas finally passes through a scrubber, where it is sprayed with limestone mist to remove sulfur compounds. Scrubber waste can be used in nonagricultural land applications.

The county can choose to build a whole-tire incinerator to handle the old tires, or it can haul the tires to a privately operated facility in the area.

Oxford Energy, the site of the world's largest scrap tire pile, is an example of a whole-tire incineration facility. Two whole-tire incinerators burn 4.5 million tires yearly, producing 14 megawatts of power, zinc oxide, and fly ash. Oxford Energy operates other tire incinerators. The tire supply is guaranteed by long-term contracts with waste tire generators.

Consistency with Local Conditions. In the past, Yolo County has contracted with Oxford Energy for disposal of tires. If the County returned to this method of disposal, it would be consistent with past practices.

Institutional Barriers. Incineration is not a high priority under AB 939. Whole-tire incineration would receive no diversion credit during the short term under AB 939, but would receive credit for tires diverted in the medium term if the total diversion through transformation does not exceed 10 percent of the total waste stream.

The CIWMB, in consultation with the state Fire Marshal and the DHS, has issued emergency regulations establishing procedures and requirements necessary to obtain a major waste tire facility permit.

Cost. Capital costs for a whole-tire incineration facility to serve the county could be about $10 to $45 million. Cost effectiveness normally requires a very large on- or near-site tire stockpile or supply, tipping fees, and a strong energy market.

Market Conditions. A tire-to-energy plant would produce electricity or steam, which can be sold to a local utility or industry.

6.3.1.5 White Goods

Two program alternatives are evaluated for white goods.

1. Repair and Reuse

General Technology Description. Discarded appliances are repaired to extend their use. Shops exist in Yolo County to repair local white goods.

Consistency with Local Conditions. Repairing and reusing white goods does not conflict with current ordinances, policies, or plans for the unincorporated area of the county.

Institutional Barriers. No institutional barriers were identified. AB 939 encourages reuse of materials and therefore condones the idea of repairing appliances as a plan to divert these items

from the waste stream. PG & E has energy efficiency programs that encourage new technology and offers rebates.

Cost. Repair cost would typically be less than the purchase price of a new appliance. In addition, repairing white goods would postpone the costly process of removing and disposing hazardous materials contained in the capacitors or cooling systems. Cost per ton or unit will vary widely depending on the extent of repairs required.

Market Conditions. The residents of the county and neighboring communities can provide a viable market for used white goods.

2. Scrap Metal Recovery

General Technology Description. White goods contain significant amounts of ferrous and nonferrous metals. Shredders can recover and separate the metals for recycling. Prior to shredding, however, hazardous materials, including PCB- and CFC-containing components, must be removed to eliminate shredder waste contamination.

Consistency with Local Conditions. Recovering metals from the waste stream is generally consistent with county recycling policy, provided it is performed in an environmentally sound manner.

Institutional Barriers. No institutional barriers are foreseen. Recycling metals from white goods conforms to federal and state recommendations for integrated waste management programs. Removing the hazardous substances is required prior to the recycling.

Cost. Cost will depend on the hazardous nature of the appliances and the disposal cost of the hazardous elements removed. Also, due to the small volume generated in Yolo County, the cost of transporting the materials to or by a scrap dealer may offset any revenue gained from sale of the material. To enhance feasibility of the program, additional ferrous and non-ferrous materials may need to be included.

Market Conditions. The scrap metal market is relatively strong locally, nationwide, and throughout the Pacific Rim countries.

6.3.1.6 Wood Debris Recovery and Recycling

Consistency with Local Conditions. Wood debris recovery for recycling is consistent with local conditions. Currently wood is diverted to a private processing center at YCCL for grinding and chipping into landscape material and hog fuel. This recovery operation conforms to the unincorporated county's source reduction and recycling policy.

Institutional Barriers. No institutional barriers are anticipated. Wood debris recovery for reuse as landscape material is consistent with the AB 939 strategy. Wood debris diverted as a fuel supplement (hog fuel) is considered transformation and so is not available for diversion credit in the short-term. Up to 10 percent of the 50 percent diversion goal for 2000 will be available as diversion credit for all transformation programs.

Cost. The wood recovery program is established at the landfill. A private entity currently manages the wood debris processing. No capital costs for the county are anticipated.

Market Conditions. The residents of the unincorporated county and the neighboring communities can provide viable markets for wood recovery landscape material products. Markets for hog fuel also exist through the Woodland Biomass and Ultra Power facilities.

6.3.2 Evaluation Results

The evaluation process involves describing the alternative and how the alternative meets specific criteria developed by Yolo County and required by state regulations. The criteria are discussed in Section 2 of this Source Reduction Recycling Element.

The criteria cover a broad range of issues reflecting the needs and desires of the unincorporated county and the requirements in AB 939 and AB 1843 and focus on technical, economic, policy, and institutional issues.

Eleven special waste alternatives were considered to manage the unincorporated county's special wastes. The alternatives are intended to divert the special wastes from landfilling and to reduce the potential hazards associated with the materials. Asphalt and concrete diversion activities were evaluated together since the evaluation vis-a-vis the criteria is approximately the same for these two activities.

The following tables provide a discussion of issues relating to each criterion and program alternative. A low, medium, or high score (L, M, H) is assigned to each criterion depending on the degree to which the alternative meets the criterion. These tables provide the background for the scores of each alternative shown in Table 6-5. The program evaluation tables are:

- Table 6-2 Construction and Demolition Program Evaluation
- Table 6-3 Tire Management Program Evaluation
- Table 6-4 White Goods and Wood Debris Program Evaluation

Table 6-2
Special Waste Alternatives for Unincorporated Yolo County
Asphalt, Inert Solids and Construction and Demolition Debris Program Evaluation

CRITERIA	Asphalt, Inert Solids and Construction and Demolition Recycling
1. **Waste Diversion Potential**	Less than 20% of the total unincorporated Yolo County area waste stream. H
2. **Environmental Impact**	Some potential environmental impacts (i.e., dust and noise). Impacts are known and controllable. M
3. **Operating Experience**	Extensively used throughout the United States. H
4. **Conformity with Local Markets**	Local markets and end users currently exist in Yolo County. May require some development in the short term. For example, contractors must be educated that the aggregate makes an acceptable subbase. H
5. **Compatibility with Existing Programs in Yolo County**	Alternative is compatible with existing programs. The county is currently recycling some asphalt as shoulder backing and to construct landfill roadways. Will require changes to local roadway and building specifications. Will require source separation of material at generation point. H
6. **Capital Cost**	No capital costs are required given that existing private sector facilities can be used. M
7. **Cost Effectiveness**	Cost for diverted ton is between $10/ton and $100/ton, depending on the quality of recovered material and end user specifications. M
8. **Long Term Costs of Environmental Impacts**	Little or no potential for long term costs due to environmental impacts. H
9. **Economic Opportunities for Public/Private Partnership**	Significant opportunities for public sector costs to be offset. Private sector can develop recycling facilities. H
10. **Conformity with State Hierarchy**	Asphalt recycling is consistent with the second level of the hierarchy. M

Table 6-2 (Continued)
Special Waste Alternatives for Unincorporated Yolo County
Asphalt, Inert Solids and Construction and Demolition Debris Program Evaluation

CRITERIA	Asphalt, Inert Solids and Construction and Demolition Recycling
11. Adaptability to Changes in County Activities and Needs	Asphalt recycling operation is adaptable to new end uses for crushed asphalt. The facility itself may require modifications to handle different materials. H
12. Ease of Implementation	Implementation time less than one year. H
13. Private Sector Participation	Significant opportunities for private sector involvement both as the processor and end user. H

Table 6-3
Special Waste Alternatives for Unincorporated Yolo County
Tire Management Program Evaluation

CRITERIA	Tire Shredding	Physical Reuse	Retreading
1. **Waste Diversion Potential**	Less than 5% of the total waste stream of the unincorporated area of Yolo County. L	Less than 5% of the total waste stream of the unincorporated area of Yolo County. L	Less than 5% of the total waste stream of the unincorporated area of Yolo County. L
2. **Environmental Impact**	Generally no adverse impacts or nuisance effects. H	Generally no adverse impacts or nuisance effects. H	Generally no adverse impacts or nuisance effects. H
3. **Operating Experience**	Extensively used throughout the United States. H	Extensively used throughout the United States. H	Approximately 2,000 tire retreading plants in the United States. H
4. **Conformity with Local Markets**	No markets exist for tire shreds. The tires are landfilled. H	Currently limited local end use markets. Local markets could be developed in the short term. For example, shipping companies can use tires as dock bumpers. M	Existing markets in the commercial and government sector for truck, bus, and other large tires. County agencies will be required to purchase retreads and procure retread services under AB 4, Chapter 1094. Local passenger retread markets will require development in the short term. M
5. **Compatibility with Existing Programs in Yolo County**	Was used as the disposal practice in Yolo County until August 1991. Service provider no longer available. L	Will require the development of a Tire Reuse Program in the county including end user information and reuse infrastructure. L	Will require the county to revise tire purchasing and procurement procedures to ensure the use of retreads. L

Table 6-3 (Continued)
Special Waste Alternatives for Unincorporated Yolo County
Tire Management Program Evaluation

CRITERIA	Tire Shredding	Physical Reuse	Retreading
6. Capital Cost	No capital costs required. H	No capital costs are required. Development costs for each project will vary. H	No capital costs are required given that existing private sector facilities can be used. H
7. Cost Effectiveness	This alternative does not divert tires from the landfill; therefore, it is not a cost effective alternative. L	The cost effectiveness varies depending on the use; however, in most cases the cost is between $10 and $100 per diverted ton. M	The cost is between $10 and $100 per diverted ton. M
8. Long Term Costs of Environmental Impacts	Little or no potential for long term costs due to environmental impacts. H	Little or no potential for long term costs due to environmental impacts. H	Little or no potential for long term costs due to environmental impacts. H
9. Economic Opportunities for Public/Private Partnership	Significant opportunities for sector costs to be offset. Private sector owns and operates the shredding facility. H	Moderate opportunities to offset public sector costs. Private sector can participate as end users. M	Significant opportunities for public sector costs to be offset. Private sector can own and operate retreading facility. H
10. Conformity with State Hierarchy	This alternative reduces the handling and disposal problems associated with tires; however, it does not receive any diversion credit. M	Physical reuse conforms with the highest level of the hierarchy. M	Retreading conforms with the second level of the hierarchy. M

Table 6-3 (Continued)
Special Waste Alternatives for Unincorporated Yolo County
Tire Management Program Evaluation

CRITERIA	Tire Shredding	Physical Reuse	Retreading
11. Adaptability to Changes in County Activities and Needs	Tire shredding services are typically contracted with the private sector; therefore, the county could discontinue the service if they want to choose another tire management option. H	The Tire Reuse Program does not require facility development or capital costs; therefore the program can be changed easily. The county's commitment is limited to a part-time recycling coordinator, thus the program can be easily changed. H	The program is easily adaptable to the county's needs because only the tire purchasing and procurement of retread services are specified. No capital investment will be lost if changes occur. H
12. Ease of Implementation	Implementation time less than one year. H	Implementation time less than one year. May require one part-time recycling coordinator. H	Implementation time less than one year. May require one part-time recycling coordinator. H
13. Private Sector Participation	Limited opportunities at this time due to poor local market conditions. M	Moderate opportunities for private sector involvement as end users. Yolo county would have to manage the Tire Reuse Program. M	Highly established in the private sector. H

Table 6-3 (Continued)
Special Waste Alternatives for Unincorporated Yolo County
Tire Management Program Evaluation

CRITERIA	Crumb Rubber	Tire-Derived Fuel	Whole-Tire Incineration
1. **Waste Diversion Potential**	Less than 5% of the total waste stream of the unincorporated portion of Yolo County. L	Less than 5% of the total waste stream of the unincorporated portion of Yolo County. L	Less than 5% of the total waste stream of the unincorporated portion of Yolo County. L
2. **Environmental Impact**	Generally no adverse impacts assuming proper management and appropriate siting of the facility. H	Few instances of adverse environmental impact in the shredding process. Impacts of TDF incineration are known and controllable. M	Air pollution impacts not fully understood. May contribute to air basin degradation. L
3. **Operating Experience**	Estimated 5 to 20 commercial operations in the United States. M	Approximately 16 large-scale commercial operations in the United States (1988). M	Less than 5 dedicated large-scale incinerators in the United States (1988). L
4. **Conformity with Local Markets**	Potential short term market opportunities for crumb rubber product use. M	Market (Redding, CA) currently used by Yolo County. H	Energy market opportunities exist for power sales to local utility or industry. H
5. **Compatibility with Existing Programs in Yolo County**	Will require new facility development for Yolo County. L	Currently used as the management practice through a contract with TDS. H	Will require the development of a new facility or a contract with the existing Oxford facility. L

Table 6-3 (Continued)
Special Waste Alternatives for Unincorporated Yolo County
Tire Management Program Evaluation

CRITERIA	Crumb Rubber	Tire-Derived Fuel	Whole-Tire Incineration
6. Capital Cost	Depending on the facility capacity, the capital cost range from $2 to $3 million. M	Assuming the existing private shredding operation is used and a privately owned boiler will burn the TDF, the county will not have any capital costs. H	Assuming a contract is obtained with Oxford Energy to incinerate the county's tires, no capital costs will be required. H
7. Cost Effectiveness	Dependent on strong end user markets for crumb rubber. Cost for diverted ton is approximately $20. M	Dependent on strong end user market for tire chips. Cost for diverted ton is approximately $20. M	Normally requires large on- or near-site tire volumes for cost effectiveness. Cost for diverted ton is approximately $170. L
8. Long Term Costs of Environmental Impacts	Little or no potential for long term costs due to environmental impacts. H	Little or no potential for long term costs due to environmental impacts. H	Environmental impacts (air) may have significant potential for long term corrective action. L
9. Economic Opportunities for Public/Private Partnership	Significant opportunities for public sector costs to be offset. Private sector can develop crumb rubber facility. H	Significant opportunities for public sector costs to be offset. Private sector will shred tires and use the TDF. H	Significant opportunities for public sector costs to be offset. Whole-tire incineration facility will be owned and operated by private sector. H
10. Conformity with State Hierarchy	Crumb rubber recycles tires. It conforms with the second level of the hierarchy. M	TDF is a transformation process, the lowest level of the hierarchy. L	Whole-tire incineration is in the lowest level of the hierarchy. L

Table 6-3 (Continued)
Special Waste Alternatives for Unincorporated Yolo County
Tire Management Program Evaluation

CRITERIA	Crumb Rubber	Tire-Derived Fuel	Whole-Tire Incineration
11. Adaptability to Changes in County Activities and Needs	Crumb rubber is adaptable to new end uses for the material. M	This alternative is adaptable in the sense that TDF is used as a fuel supplement to the boiler facilities; therefore, if TDF is not available an alternative fuel can be used. Alternative end uses could be developed for the tire chips. H	This alternative is not adaptable to change. The facility relies on whole tires as a sole source of fuel and will require a minimum quantity of tires to operate effectively. L
12. Ease of Implementation	Minimum implementation time 1.5 to 2 years for design, construction, equipment testing, market development, etc. M	No implementation time required. Alternative already operating. H	Assuming Oxford Energy plant will be used to incinerate Yolo's tires, implementation time required to renegotiate contract be 1 to 1.5 years. L
13. Private Sector Participation	Significant opportunities for private sector development and operation. H	Significant opportunities exist for private sector development and operation. H	Significant opportunities exist for private sector development and operation. H

Table 6-4
Special Waste Alternatives for Unincorporated Yolo County
White Goods and Wood Debris Program Evaluation

CRITERIA	Repair and Reuse	Scrap Metal Recovery	Wood Waste Recovery
1. **Waste Diversion Potential**	Less than 5% of the total Yolo County unincorporated area waste stream. L	Less than 5% of the total Yolo County unincorporated area waste stream. L	Less than 20% of the total unincorporated Yolo County waste stream. M
2. **Environmental Impact**	Generally no adverse impacts. H	Few instances of adverse environmental impacts (related to the hazardous substances in some white goods). Impacts are known and controllable. M	Generally no adverse environmental impact. Little nuisance effect if properly sited for noise and dust. H
3. **Operating Experience**	Extensively practiced throughout the United States. H	Extensively practiced throughout the United States. H	High degree of reliability; few technical failures. H
4. **Conformity with Local Markets**	Yolo County residents will serve as the local market for repaired white goods. H	Local scrap metal markets are strong. H	Unincorporated county residents will serve as the local market for repaired goods. Market subject to fluctuation. M

Table 6-4 (Continued)
Special Waste Alternatives for Unincorporated Yolo County
White Goods and Wood Debris Program Evaluation

CRITERIA	Repair and Reuse	Scrap Metal Recovery	Wood Waste Recovery
5. **Compatibility with Existing Programs in Yolo County**	This alternative will require the development of a new program and possibly a repair facility. In addition, collection and disposal practices will have to be altered to divert white goods to repair centers. L	This alternative will require the development of a new program. Assuming existing private sector scrap metal operations can take on the additional materials, a new facility will not be required. In addition, collection and disposal practices will have to be altered to divert white goods to scrap yards. L	This is an existing program in Yolo County. H
6. **Capital Cost**	The capital costs for establishing a repair operation will be minimal assuming use of county land. H	No significant capital costs are required. Operating and maintenance costs may be significant because the cost associated with the disposal of hazardous materials is high. H	Some capital cost necessary for chipping/grinding equipment when volume is sufficient to support the purchase. H

Table 6-4 (Continued)
Special Waste Alternatives for Unincorporated Yolo County
White Goods and Wood Debris Program Evaluation

CRITERIA	Repair and Reuse	Scrap Metal Recovery	Wood Waste Recovery
7. **Cost Effectiveness**	The cost effectiveness varies depending on the level of repair required and number of repairable items. Cost for diverted ton is between $10/ton and 100/ton. M	The cost effectiveness varies depending on the cost of removal and disposal of hazardous materials. Cost for diverted ton is between $10/ton and $100/ton. M	Unknown diverted cost per ton. Assumed to be between $10 and $100 per ton. M
8. **Long Term Costs of Environmental Impacts**	Little or no potential for long term costs due to environmental impacts. H	Little or no potential for long term costs due to environmental impacts if handling and disposal of the hazardous elements is managed correctly. H	Little or no potential for long term costs due to environmental impacts. H
9. **Economic Opportunities for Public/Private Partnership**	Significant opportunities for public sector costs to be offset because the private sector can develop and operate the repair facilities. H	Moderate opportunities for public sector costs to be offset. Public/private partnership may be appropriate; the private sector may not be interested in covering the costs associated with the removal of the hazardous elements. H	Significant opportunities for private sector involvement. Current facility is privately owned, but operated on public land and permitted by the county. H

Table 6-4 (Continued)
Special Waste Alternatives for Unincorporated Yolo County
White Goods and Wood Debris Program Evaluation

CRITERIA	Repair and Reuse	Scrap Metal Recovery	Wood Waste Recovery
10. Conformity with State Hierarchy	Repair and reuse of white goods conforms with the highest level of the hierarchy. H	Scrap metal recovery conforms with the second level of the hierarchy. In addition, the purpose of this alternative is to reduce the hazardous potential associated with disposal of the white goods. H	Landscape product or compost conforms to the second level of the hierarchy. Hog fuel product involves transformation. M
11. Adaptability to Changes in County Activities and Needs	This alternative is readily adaptable to changes because no significant capital costs are required to develop a repair yard. The repair yard could be redesigned to accommodate additional materials. H	This alternative is readily adaptable to changes. No significant capital costs or facilities are needed for the scrap metal operation. If the types of recoverable materials in white goods changes, the program can be modified. H	Current operation is capable of expansion to handle 50,000 tons per year. H
12. Ease of Implementation	Implementation time less than one year. H	Implementation time less than one year. H	Program currently exists. H
13. Private Sector Participation	Significant opportunities for private sector to own and operate a repair yard for white goods. H	Significant opportunities for private sector involvement as the scrap metal salvager. H	Private sector currently participating. H

Table 6-5

Special Waste Diversion Alternatives Weighted Score for Unincorporated Yolo County

Criteria	Weighting Factor	Asphalt, Inert Solids and Construction and Demolition Debris		Tire Reuse		Tire Retread		Crumb Rubber	
1. Waste Diversion Potential	14.5	3	43.5	1	14.5	1	14.5	1	14.5
2. Environmental Impacts	8.3	2	16.6	3	24.9	3	24.9	3	24.9
3. Operating Experience	10.1	3	30.3	3	30.3	3	30.3	2	20.2
4. Conformity with Local Markets	5.0	3	15.0	2	10.0	2	10.0	2	10.0
5. Compatibility with Existing Programs in Yolo County	8.2	3	24.6	1	8.2	1	8.2	1	8.2
6. Capital Costs	6.1	2	12.2	3	18.3	3	18.3	2	12.2
7. Cost Effectiveness	9.5	2	19.0	2	19.0	2	19.0	2	19.0
8. Long-Term Costs of Environmental Impacts	7.4	3	22.2	3	22.2	3	22.2	3	22.2
9. Economic Opportunities for Public/Private Partnership	4.8	3	14.4	2	9.6	3	14.4	3	14.4
10. Conformity with State Hierarchy	7.9	2	15.8	2	15.8	3	23.7	2	15.8
11. Adaptability to Changes	6.9	3	20.7	3	20.7	2	13.8	2	13.8
12. Ease of Implementation	7.2	3	21.6	3	21.6	3	21.6	2	14.4
13. Private Sector Participation	4.1	3	12.3	2	8.2	3	12.3	3	12.3
Raw Score			268.2		223.3		233.2		201.9
Rank		1		8		4		9	

Table 6-5 (Continued)
Special Waste Diversion Alternatives Weighted Score for Unincorporated Yolo County

Criteria	Weighting Factor	Tire Shredding		Tire Derived Fuel		Whole Tire Incineration		White Goods Reuse	
1. Waste Diversion Potential	14.5	1	14.5	1	14.5	1	14.5	1	14.5
2. Environmental Impacts	8.3	3	24.9	2	16.6	1	8.3	3	24.9
3. Operating Experience	10.1	3	30.3	2	20.2	1	10.1	3	30.3
4. Conformity with Local Markets	5.0	3	15.0	3	15.0	3	15.0	3	15.0
5. Compatibility with Existing Programs in Yolo County	8.2	1	8.2	3	24.6	1	8.2	1	8.2
6. Capital Costs	6.1	3	18.3	3	18.3	3	18.3	3	18.3
7. Cost Effectiveness	9.5	1	9.5	2	19.0	1	9.5	2	19.0
8. Long-Term Costs of Environmental Impacts	7.4	3	22.2	3	22.2	1	7.4	3	22.2
9. Economic Opportunities for Public/Private Partnership	4.8	3	14.4	3	14.4	3	14.4	3	14.4
10. Conformity with State Hierarchy	7.9	2	15.8	1	7.9	1	7.9	3	23.7
11. Adaptability to Changes	6.9	3	20.7	3	20.7	1	6.9	3	20.7
12. Ease of Implementation	7.2	3	21.6	3	21.6	1	7.2	3	21.6
13. Private Sector Participation	4.1	2	8.2	3	12.3	3	12.3	3	12.3
Raw Score			223.6		227.3		140.0		245.1
Rank		7		6		10		3	

Table 6-5 (Continued)
Special Waste Diversion Alternatives Weighted Score for Unincorporated Yolo County

Criteria	Weighting Factor	White Goods Scrap Recovery		Wood Waste Recovery	
1. Waste Diversion Potential	14.5	1	14.5	2	29.0
2. Environmental Impacts	8.3	2	16.6	3	24.9
3. Operating Experience	10.1	3	30.3	3	30.3
4. Conformity with Local Markets	5.0	3	15.0	2	10.0
5. Compatibility with Existing Programs in Yolo County	8.2	1	8.2	3	24.6
6. Capital Costs	6.1	3	18.3	3	18.3
7. Cost Effectiveness	9.5	2	19.0	2	19.0
8. Long-Term Costs of Environmental Impacts	7.4	3	22.2	3	22.2
9. Economic Opportunities for Public/Private Partnership	4.8	2	9.6	3	14.4
10. Conformity with State Hierarchy	7.9	3	23.7	2	15.8
11. Adaptability to Changes	6.9	3	20.7	3	20.7
12. Ease of Implementation	7.2	3	21.6	3	21.6
13. Private Sector Participation	4.1	3	12.3	3	12.3
Raw Score			232.0		263.1
Rank		5		2	

6.4 SPECIAL WASTE PROGRAMS SELECTED BY YOLO COUNTY

The special waste programs selected for the unincorporated county are discussed in this section. The programs were selected based on local conditions and concerns, on the numerical ranking, and best professional judgment. Each program is tailored to suit the existing condition and needs of the unincorporated county. Selected special waste programs for U.C. Davis are described in Appendix E.

6.4.1 Selected Special Waste Programs

The special waste management programs selected for the unincorporated county are listed in Table 6-6. These programs will focus on available reuse and recycling techniques and will build on existing area recycling activities. For the selected special waste programs, capital costs and annual operating expenses have been calculated.

Programs included for the unincorporated Yolo County special waste management include asphalt recycling; concrete recycling; scrap metal recovery from white goods; wood debris recovery; and various tire programs.

Certain programs evaluated for the unincorporated county may be most effectively performed through a multijurisdictional waste management system. Due to the proximity of similar programs in neighboring communities, the economy of scale afforded by cooperative efforts, and the expense of developing and operating many individual programs, a cooperative approach is expected to provide more comprehensive and effective programs that reach more people and share program costs.

Table 6-6
Special Waste Programs Selected
by Unincorporated Yolo County

CONSTRUCTION AND DEMOLITION

Asphalt Recycling*
- Require separation of asphalt prior to entry at YCCL
- Reuse of asphalt millings from roadwork
- Revise construction and procurement specifications
- Educate businesses on uses for recycled asphalt
- Use as road base at the YCCL

Concrete Recycling*
- Require separation of concrete prior to entry at YCCL
- Reuse/recycle concrete using private sector facilities
- Revise construction and procurement specifications
- Educate businesses on uses for recycled concrete
- Use as road base at the YCCL

TIRES

Physical Reuse of Tires
- Develop reuse projects with the County Parks, Public Works, and Sheriff Departments and other appropriate users (schools, businesses, etc.)
- Encourage reuse by private sector and schools.

Tire Retreading
- Identify county disposed tires that are suitable for retreading
- Contract with private entity for service
- Revise procurement guidelines to allow purchase of retreads
- Educate public and businesses on use of retreads.

Crumb Rubber
- Monitor crumb rubber facility development in Northern California
- Revise procurement guidelines to allow/encourage crumb rubber in asphalt and other surfacing and equipment purchases
- Educate businesses on use of crumb rubber.

Tire Shredding*
- Separate tires for further processing or safe landfilling

Tire-Derived Fuel
- Investigate facilities that use TDF product
- Separate tires for further processing as fuel supplement for industry
- Execute as alternative program with shredding program.

Whole Tire Incineration
- Separate non-reusable tires for power plant.
- Execute as alternative program if current shredding programs fails.

Table 6-6 (Continued)
Special Waste Programs Selected
by Unincorporated Yolo County

WHITE GOODS

Salvaging of Scrap Metals from White Goods
- Provide once a year collection day at the Esparto Convenience Center
- Remove hazardous material
- Develop bin transfer capability at YCCL to facilitate collection of white goods
- Contract with vendor for shredding and baling scrap.

WOOD DEBRIS

Recovery and Chipping of Wood Debris*
- Develop bin transfer capability at YCCL to facilitate collection
- Separate suitable material for hog fuel
- Separate material for chipping as landscape/soil amendment products
- Educate public on landscape product availability.

* Existing special waste programs to be continued and expanded.

During the evaluation process, each alternative diversion program was examined with an eye toward which is most appropriate for a multijurisdictional approach. Programs identified as most appropriate for the unincorporated county alone to implement include asphalt and concrete recycling, and tire reuse and retread. Those suited for a multijurisdictional approach also include concrete recycling, and tire reuse and retread, as well as crumb rubber, tire shredding/TDF, whole tire incineration, white goods scrap recovery and wood debris recovery. Both types of programs could be restructured to allow a change in implementation responsibility.

6.4.1.1 Construction and Demolition Debris

This program was selected because of its high score (ranked second) and its consistency with the county's current operation for diversion of these materials. Since construction and demolition debris is heavy and bulky, the county will benefit from addition to the life of the landfill and achieve significant waste diversion by recycling this material. Programs for recovery of this material are relatively inexpensive and therefore easy to implement. At present only

asphalt and concrete are identified for construction and demolition diversion; steel reinforcing (re-bar) and sheet-rock materials may be considered at some future date. This activity is expected to create little or no shift in waste type generation or use.

Asphalt

The recycling program will require all county contractors and departments to recycle asphalt as a condition of their contract. The county will revise construction specifications to encourage or require the use of recycled material in the asphalt specifications.

The county will explore the purchase of equipment for processing asphalt millings from county roadway projects if the private sector does not have sufficient capacity to handle projected amounts.

In the future, as part of a multijurisdictional arrangement, the unincorporated county may participate in construction of a materials recovery facility capable of separating, processing, and storing this material. This alternative is discussed further in the Recycling Component.

Public and private sectors will be required to separate asphalt debris prior to entry at the landfill. They will also be encouraged to purchase asphalt mix with recycled content. As part of the overall public education campaign information will be developed and made available to contractors and other interested parties about suppliers and appropriate uses for recycled asphalt.

Discarded asphalt will also continue to be used as road base at the YCCL during the winter season. Reusing asphalt in this way reduces the county's requirements for virgin road base or aggregate and its subsequent disposal. The practice therefore extends landfill capacity, a key goal of AB 939, while also creating a viable local end use.

Concrete

The county will also encourage the private sector to recycle concrete and to separate any of the material before bringing to YCCL. County contracts will require contractors to source separate debris and deliver recyclables to recycling facilities. The county will not only recycle concrete material through private sector facilities, but will also develop a policy to use recycled material in county construction projects including re-use at YCCL. The county will revise construction specifications to encourage or require the use of recycled material in concrete specifications. No new facilities are anticipated.

In addition, the unincorporated county will provide outreach/education programs for private-sector contractors, developers, and residents regarding the availability of facilities for recycling concrete and asphalt. A data base may be maintained offering information on materials exchange programs as well as local recyclers and contractors that actively recycle and use recycled material. These education and material exchange programs may be part of a multijurisdictional arrangement targeting contractors and developers in the area.

Discarded concrete will also continue to be used as road base at the YCCL during winter season. Reusing concrete in this way reduces the County's requirements for virgin road base or aggregate and its subsequent disposal. The practice therefore extends landfill capacity, a key goal of AB 939, while also creating a viable local end use.

6.4.1.2 Tires

Because there are no existing long-term contracts for tire management, the county has little control over off-site disposal. The programs selected can provide complementary long-term disposal options for the county tires and be substituted for the existing program when it is terminated.

No special handling or disposal requirements are necessary for the tire management program. Tire generators will transport the tires in the same manner currently used; the tires will be

diverted at the YCCL for retreading, crumb rubber, incineration or shredding/TDF programs. Handling requirements for the physical reuse of tires will be specific for the needs of each project. No new county facilities are expected to be required for the tire management program. Some additional staff time may be required to oversee this multifaceted program. These programs are expected to create little or no shift in waste type generation or use.

Aside from the physical reuse program, tire management may also be accomplished on a multijurisdictional level to provide sufficient material for the crumb rubber, retread, shred, and incineration programs. If certain options are pursued (crumb rubber, retread, shred), a new facility may be necessary if the private sector does not develop one. Public education may also be accomplished through a multijurisdictional arrangement.

Physical Reuse

Physical reuse of tires was selected because it conforms with the state policy of reuse, is a means of education by example, and is an inexpensive, uncomplicated, and potentially a creative means of diverting some tires from incineration.

To divert tires from the YCCL, the tire reuse program will be established to encourage the physical reuse of tires and coordinate reuse projects as necessary. Physical reuse applications will be developed and implemented both at the county level and in the private sector. The Department of Public Works and Transportation will consider use of whole tires in county projects, including, but not limited to, landscape borders, highway crash barriers, erosion control, playground materials, and other creative, innovative uses. Although the physical reuse program may not have the potential to divert a large quantity of tires, it has been selected because it is an education tool that shows the county's commitment to recycling.

Retread

Tire retreading is a program that receives diversion credit and is relatively easy to implement. It also conforms to the state policy of reuse and sets and an educational example for the

community while enhancing the market development of retreads and reducing the use of virgin materials.

The unincorporated county will implement use of retread tires on a designated fleet of department pool vehicles and public works equipment to evaluate the performance and cost effectiveness of retreads. If favorable, the county will expand the use of retreads to all appropriate county vehicles. Sheriff and fire departments would remain exempt from use of retreads until state regulations permit their use. County procurement policies would reflect preference to retread tires for designated fleet vehicles. The county would also pass on serviceable tires that no longer meet the standards for law enforcement and fire vehicles to the designated fleet.

The private sector will be encouraged to purchase retread tires through public education campaigns coordinated with tire supply dealers.

Crumb Rubber

To further increase the tire diversion rate, the unincorporated county will investigate the use and sources of crumb rubber. Yolo County will become active in promoting the use of products made from crumb rubber through procurement policies and public education. A crumb rubber program is compatible with the state reuse policy.

Rubberized asphalt paving specifications will be developed and implemented. In addition, the county will identify other areas in which it can use crumb rubber, such as sports and recreational surfaces, soil improvements, and oil spill cleanup. Developing programs that will increase demand for this product may motivate the private sector to invest in this technology in Yolo or nearby counties.

As noted above, there is some interest in opening a crumb rubber facility in Sonoma County. If markets are available, the project is more likely to proceed. Yolo County's intent to purchase crumb rubber products will assist in creating markets for this operation.

To achieve some economy through volume, the unincorporated county will pursue, as necessary, a multijurisdictional arrangement to facilitate sales to and purchases from crumb rubber facilities. Public education efforts regarding crumb rubber may also be started after identifying possible uses by the local commercial and industrial sector.

Tire Shred/Tire Derived Fuel

California has cogeneration plants that are capable of using tire derived fuel. Yolo County currently sends collected tires from the YCCL to a facility in Redding, CA for use as an alternative fuel. A small portion of these tires are reused or retreaded. The County will continue with this program as long as it remains an economically viable and environmentally sound one for the county.

Currently the shredding/monofilling or TDF programs do not receive any diversion credit. The value of these programs is in extending the life of the landfills, reducing hazards associated with whole tire landfilling, and reducing handling costs and potentially generating some revenue. In the mid-term (after 1995), TDF will generate diversion credits. Yolo County will also monitor state CIWMB reports and feasibility studies regarding TDF. The CIWMB is expected to publish a report with the Air Resources Board regarding feasibility of TDF facilities by December 1991.

Whole Tire Incineration

While this does not conform to the hierarchy of waste management developed by the state, incineration does offer the same benefits as the shredding and TDF programs. The additional benefits of the proximity of an operating incineration plant in Westley (Stanislaus County), the increase of recycling credits due to Oxford's recycling programs, and the reduced handling and processing make this program potentially more feasible for the unincorporated county than the shred/TDF programs, especially when approached through a multijurisdictional arrangement. The reliability of the incineration process may indicate a need, however, to have another option available for this waste stream. The unincorporated county will participate in an investigation of both TDF and incineration and prepare plans for both alternatives.

Summary of Tire Programs

The tire management program for the unincorporated county will rely in some way on all the above alternatives. In the unincorporated county the source reduction of tires will begin with public education programs. This effort will educate consumers on the basics of good vehicle/tire maintenance and the value of public transportation in order to prolong the life of the tires. Recycling of tires in the unincorporated county will occur through the outlined physical reuse and retread programs. For those tires that cannot be reused, they will be processed for energy recovery. While the unincorporated county recognizes the value of public education, reuse and retread programs, the bulk of the tire waste stream will be diverted to energy recovery programs. This represents the most value for the investment in terms of hazard reduction and extension of the landfill life.

6.4.1.3 White Goods

White goods make up less than one percent of the unincorporated county waste stream. Like tires and construction and demolition debris, they are bulky and easily source separated from the waste stream. Scrap metal recovery also conforms with reuse policies because this material is diverted to processors that resell it as feedstock in the private manufacturing sector. Another consideration for a white goods program is the removal of hazardous material.

As part of the white goods recovery program, the county will investigate new methods for collecting these materials including providing bins at YCCL for separate drop-off of all self-haul loads, and an annual collection day at the Esparto Convenience Center. More information about the bin collection at YCCL is contained in the Recycling Component, Section 4. The county will continue to actively investigate alternatives for the environmentally safe and cost effective removal and proper disposal of hazardous materials in white goods. This program is expected to have little or no impact on waste type generation or use.

The county will contract with a scrap dealer to assist with this program and the removal of hazardous materials and investigate the use of other low cost labor alternatives.

This type of diversion program is best supported through public education and material exchange programs. The unincorporated county will enhance the public cleanup efforts through educational materials and publicity about participation in the collection event. As part of a source reduction program, the unincorporated county will educate the residents and businesses about the value of repairing the goods and the proper means of disposing of them so they may be resold/reused. As part of the education effort the county will provide a list of outlets for donation of reusable white goods and purchase of repaired goods. These efforts would include multimedia approaches and more neighborhood involvement.

The unincorporated county may participate in a multijurisdictional agreement to educate residents and businesses about proper disposal of white goods and the removal of hazardous materials. Suitable recovered materials will be listed on a materials exchange data base for possible recycling. Additionally, participation in a material exchange data base may provide a market for recovered appliance parts not suitable for scrap metal operations.

Due to market conditions and the estimated low volume of material, Yolo County may need to include other recovered/separated material as part of a contract to attract dealers interested in removing and processing the white goods scrap. Ferrous and non-ferrous metals may be attractive to processors and Yolo County expects to include these in the bin transfer operation, separating these from the waste stream. No new facilities are anticipated.

6.4.1.4 Wood Debris Recovery

Similar to construction and demolition debris, wood debris represents a large portion of the unincorporated county special waste stream. This material is also easily identified, bulky, easily separated at the source, and often in acceptable condition for reprocessing. Presently suitable, separated wood is diverted to a chipping/grinding operation (Valley By-Product) at the YCCL. This program is expected to have little or no impact on waste type generation or use.

The unincorporated county wood debris recovery program may require separation of building materials prior to hauling to the landfill, and diverting appropriate wood material to the Valley

By-Product facility. Private projects and unincorporated county projects may be required to separate wood materials at the construction/demolition site and deliver the separate materials to Valley By-Product. The bin-transfer operation (discussed in the Recycling Component, Section 4) will also accept residentially generated self-haul wood waste for recovery. The wood material will be chipped for landscape uses or hog fuel. If a sludge composting program is initiated anytime in the future, the material could also be used as a compost bulking agent.

At this time no new facilities are anticipated.

A public education program will incorporate information for residents and business on how to recycle wooden household or office materials and provide a list of second-hand shops that buy and sell such items. Information on the availability of landscape material products will also be included in the public education program.

6.4.2 Costs

Programs will be paid through the Sanitation Enterprise Fund or program fee revenues. For most of the selected programs, there will be no direct public-sector costs associated with the program other than administration, public education, monitoring, and evaluation. The asphalt and concrete recycling, white goods scrap recovery, tire retread, and wood debris recovery programs will all require a significant public education effort. Physical reuse of tires will also need support from public education programs and may require some facility expense to stockpile tires for reuse, but costs should be minimal. Most other program costs (such as facility or operation costs) will be handled by existing and expanded programs in the private sector. One exception is the bin-transfer operation planned for the YCCL to be developed by the county.

6.4.3 Role of Special Wastes in Meeting State Diversion Goals

The special waste programs will assist the unincorporated county in meeting the state diversion goals as mandated by AB 939. Expected diversion rates have been determined for each special waste type. The diversion rates are based on the type of special waste program, time to implement the program, and estimated participation rates. Table 6-7A summarizes by waste generator, the anticipated diversion quantities for each program. The percent of material diverted and portion of the total waste stream is also identified. Table 6-7B summarizes anticipated special waste diversions for U.C. Davis.

Until 1997, the selected special waste programs, in conjunction with the bin transfer operation and Valley By-Product operation at the YCCL will provide the diversion for selected special wastes. After 1997 it is anticipated that special waste diversion will occur through a material recovery facility (and continued Valley By-Product operation) which will handle all waste streams.

Table 6-7A
Projected Special Waste
Diversion Levels for Unincorporated Yolo County

	1995[a]		2000[ab]	
	Tons	Percent	Tons	Percent
Asphalt [c] (tons)	1	0	1	0
Inert Solids [c] (tons)	3,134	8.3	3,278	8.0
Tires [d] (tons)	2	0	5	0
Wood [e] (tons)	250	0.7	284	0.7
Total Diverted Tons	3,387	9.0	3,568	8.7

a Based on the projected waste stream in the SWGS for 1995 and 2000.
b Assumes a material recovery facility is operating.
c These material categories comprise some of the asphalt and concrete that will be diverted. In addition, some diversion will be realized from the construction and demolition debris category as shown in the Recycling Component, Section 4.
d A small portion of tires will be diverted to physical reuse program. Source reduction diversion will be quantified after start of the retread program. The balance of tires will be sent to a recycler with approximately 10% of those being recycled and 90% sent to transformation. The tonnage shown here reflects the 10% recycled only.
e The diversion percentage for tires and wood waste will increase after 1995 due to credit allowed for transformation. The increase shown here for wood waste is only reflective of the increased effectiveness of the recovery program. The increase in diversion from transformation is unknown and will be determined after 1995.

Note: White goods diversion will occur primarily through the bin transfer operation and material recovery facility discussed in the Recycling Component, Section 4. Projected diversion levels are discussed in that component.

Table 6-7B
Projected Diversion Levels
by Material Type for U.C. Davis (TPY)

Material	1995		2000	
	Tons	Percent	Tons	Percent
Wood waste	0	0	286	0.7
Concrete & asphalt	3,381	9.0	3,571	8.7
Ferrous metal	251	0.7	265	0.6
Dead animals (other special)	0	0	245	0.6
Total	3,632	9.7	4,367	10.6

6.4.4 Program Needs

Section 18733.4 (d) and (e) of the regulations require a description of the proposed methods for handling and disposal necessary to implement selected programs as well as a description of any new or expanded facilities needed to implement selected programs. The following discussion provides some detail on the needs and the assumptions made in their assessment, followed by a summary in Table 6-8.

6.4.4.1 Construction and Demolition Debris

Handling and Disposal Requirements

The ideal process for the handling and disposal of construction and demolition debris to promote recycling requires source separation of dissimilar materials by the generator. Whether the generator is a county crew or a private contractor, separate debris boxes should be placed on the construction site for segregated receipt of asphalt and concrete. Recycling of source-

separated material would not require costly separation of commingled waste prior to recycling processing.

After construction and demolition debris is delivered to the landfill, whether source separated or delivered by a generator in commingled form, the material is stockpiled by material type prior to processing. In the case of the market for clean fill or road base, these stockpiles may be unloaded "as is."

If not unloaded as is, asphalt and concrete must go through a crushing process that will provide size classification and reduction of the material, and will produce a homogeneous stock. A portable crusher capable of handling asphalt and concrete can process approximately 150 tons per hour of material. Additional handling equipment includes a front-end loader capable of maintaining stockpiles, loading the crusher, and loading transfer trucks with homogeneous end-product.

The unincorporated county will rely on private sector facilities for any crushing and storing the material for resale or reuse. A portion of the material will continue to be used by YCCL for road base.

Facility Requirements

Processing construction and demolition debris includes the receipt, separation, stockpiling, crushing, and unloading of material. It is anticipated that portions of this activity will occur at the YCCL; private facilities will also be used. Any future recycling facility would be sized to accommodate the activity level at YCCL.

6.4.4.2 Tires

Handling and Disposal Requirements

After they are removed from vehicle service, tires are typically stockpiled prior to bulk transfer for disposal. Interim stockpiles are found at various garages, gas stations, and tire centers in government departments and private sectors. These stockpiles are transferred to a recycling market in the private sector. They may be transferred in bulk to satellite drop-off sites or stockpiled at a central site awaiting pickup by recyclers. The same is true for the residential stream of tires for disposal.

Handling of the tires does not require any equipment if the labor force is sufficient to manually move and stack the tires. However, a front-end loader would be a labor-saving and sufficient means of stockpile maintenance. For most of the recommended tire management programs, stockpiling of whole tires is appropriate while awaiting transfer to market. There should not be a problem with vectors (rodents and mosquitoes) if a proper frequency of transfer is maintained (such as one week).

Facility Requirements

An area to handle receipt, stockpiling, and transfer of tires is required. The size of the area is determined by the frequency of transfer, but is expected to be less than one quarter of an acre for all tires generated in Yolo County.

6.4.4.3 White Goods

Handling and Disposal Requirements

For white goods collection programs the ideal method of handling is door-to-door pickup. This ensures that the goods are received in the best condition possible; however, due to the rural nature of Yolo County, the equipment and labor involved, this will not be cost-effective.

Alternatively, an annual collection day at Esparto Convenience Center in the unincorporated county will accept white goods from county residents. The bin-transfer operation at the YCCL site will also accept white goods.

For any collection program, including an annual one-day event, providing supervision during specific hours at a specific site (accessible yet visible), may reduce the potential for illegal dumping. Coordination with local law enforcement patrols would serve to further reduce undesired activity at the drop-off site during any unsupervised hours. Limiting the number of days for the drop-off (one weekday, one weekend day) will also limit the opportunity for abuse of the program.

Coordination with and notification of the scrap dealers of a planned collection event will facilitate the removal of white goods. Provision must be made to handle the timely disposal at the landfill of any goods collected that are not suitable for scrap recovery. Any hazardous materials contained in the goods will be removed by qualified personnel. These hazardous materials will be disposed of according to applicable regulations.

Facility Requirements

The white goods program will be handled through the bin transfer operation at the YCCL in the short term. Materials delivered to the landfill after 1997 will be diverted for scrap recovery or disposal through the material recovery facility.

6.4.4.4 Wood Debris Recovery

Handling and Disposal Requirements

Wood debris will be collected from appropriate loads entering YCCL. Any suitable wood will be recovered at that time through either the bin transfer station (short term) or the material recovery facility (medium term) and diverted to the Valley By-Product. Source separated wood from construction sites will be diverted directly to Valley By Products.

Facility Requirements

The bin transfer facility and material recovery facility will be used to implement the wood debris recovery program in the short and medium terms, respectively. Projections indicate that Valley By-Products are capable of handling materials through the medium term (RFI, August 1990).

Table 6-8
Special Waste Program Needs
in Unincorporated Yolo County

Construction and demolition

- Separate material at generation site
- Haul to processing site
- Modify construction and procurement specifications
- Educate businesses

Tire program

- Modify procurement and reuse practices for county fleets
- Develop reuse programs
- Coordinate efforts with multijurisdictional approaches to incineration and shredding/TDF
- Modify specifications and investigate uses for crumb rubber products
- Educate public on retread and reuse opportunities.

White goods program

- Examine collection and salvaging practices
- Develop public collection program
- Participate in public education program to promote repair and reuse prior to scraping.

Wood debris program

- Require construction/demolition projects to separate wood debris
- Continue participation in grinding/chipping program at landfill
- Educate public on availability of landscape materials.

6.4.5 Anticipated End-Users for Recovered Products

The anticipated end-users for the materials recovered by the unincorporated county's special waste programs are shown in Table 6-9.

Table 6-9
Anticipated End-Users of Recovered Materials

Construction and Demolition Debris

- Aggregate made by crushing old asphalt or concrete will be recycled as a subbase material used by paving and building contractors.
- At a private asphalt plant, asphalt aggregate made by crushing old asphalt will be recycled in new mixes of asphalt.
- Concrete plants will recycle concrete aggregate in new batches of concrete.
- Winter roads and work areas at Yolo County Central Landfill.

Tires

- Targeted retread markets will include the county departments and truck, bus, taxi, and other transportation operators.
- Targeted end-users for the physical reuse program will include individual residents, small businesses, schools, and government within the unincorporated county, the state Department of Transportation, and others as identified in the program.
- Crumb rubber end-users will include asphalt paving contractors who will use rubberized asphalt. Possible end-uses include sports, recreational, and feedlot surfaces; soil improvements; and oil spill clean-up.
- Locally, shredded tires are currently not recycled. Opportunities for this product will require investigation and development. The county will monitor state activities in the area of tire shred markets development and employ identified options when and if they are found locally suitable.

White Goods

- Scrap metal recovered from white goods will be sold to local scrap metal processors.
- Recovered hazardous materials will be properly disposed of or recycled as appropriate.

Wood Debris

- Wood will be processed and offered for sale to area residents/businesses as landscape material or to contracted plants as hog fuel.
- Wood chips will be mixed with the composting product and used as alternative daily cover at YCCL.

6.5 IMPLEMENTING SPECIAL WASTE PROGRAMS FOR UNINCORPORATED YOLO COUNTY

6.5.1 Responsible Entities

The Yolo County Department of Public Works and Transportation will be the primary party responsible for implementation and coordination of the special waste program. Where feasible and efficient it will coordinate county programs with multijurisdictional efforts. Other responsible parties include the Community Development Department (to coordinate modification of different specifications and to implement and enforce construction and demolition material separation on all projects in the county); Auditor-Controller (to modify and implement procurement policies); and the Sheriff's Department (to implement proper disposition of departments' used tires). Responsible entities for U.C. Davis programs are discussed in Appendix E.

6.5.2 Required Tasks

For each special waste program, specific tasks have been identified at a level of detail that should be adequate for the responsible entities to establish a work plan, allocate hours, and obtain funding. In addition, the implementation date and costs of each task are provided. This information is provided in Table 6-10. Implementation of special waste programs for U.C. Davis is described in Appendix E.

Table 6-10
Summary of Special Waste Program
Implementation for Unincorporated Yolo County

Short-Term Tasks (1991-1995)	Schedule	Cost
Construction and Demolition Debris: Asphalt and Concrete		First year: $5,800
• Research used asphalt and used concrete markets to determine material buyers, end-users, market prices or disposal charges, and specifications.	January - June 1993	Annual: $3,000
• Revise construction specifications requiring asphalt and concrete contractors to use specific percentages of used asphalt/concrete.	January - June 1993	
• Educate asphalt and used concrete generators, county operators, asphalt and concrete paving contractors, construction and demolition debris firms, construction materials buyers, and end-users to identify opportunities and recycling services available. Require separation of asphalt and concrete at construction sites.	July 1993 - ongoing	
• Adjust landfill tipping fees every July.		
• Begin ongoing use of the revised construction specifications.	July 1993 - ongoing	
• Evaluate and monitor program	January 1994 - ongoing	
Tires		Total for all tire programs:
• For all tire programs, research quantity of scrap tires generated by type (truck, car, equipment).		First Year: $15,000
A) Physical Reuse		
• Develop Tire Reuse Pilot Program. Research possible tire reuse projects for the community and identify end-users.	January - June 1993	Annual: $3,500

Table 6-10 (Continued)
Summary of Special Waste Program
Implementation for Unincorporated Yolo County

Short-Term Tasks (1991-1995)	Schedule	Cost
• Educate government agencies, residents, small businesses, schools, and other potential end-users on possible reuse alternatives and the services of the Pilot Program.	July 1993 - ongoing	
• Begin ongoing Tire Reuse Pilot Program.	July 1993 - ongoing	
• Coordinate the individual tire reuse projects. Work with the end-user and tire generator to establish tire costs and delivery arrangements.	July 1993 - ongoing	
• Evaluate and monitor program.	January 1994 - ongoing	
B) Retreading		
• Revise tire purchasing specifications to include retreads.	January - June 1993	
• Develop bid specification to obtain a vendor.	January - June 1993	
• Issue request for bid to select retread supplier and processor.	June 1993	
• Begin ongoing retread purchasing and procurement program.	July 1993 - ongoing	
• Educate residents and small businesses regarding the environmental advantage, safety, quality, and life expectancy of retread tires.	July 1993 - ongoing	
• Educate generators that retreading is a viable alternative to landfilling.	July 1993 - ongoing	
• Evaluate and monitor program.	January 1994 - ongoing	
C) Crumb Rubber		
• Monitor crumb rubber facility development in Northern California.	January 1993 - ongoing	
• Monitor Cal Trans bid specifications concerning rubberized asphalt.		

Table 6-10 (Continued)
Summary of Special Waste Program
Implementation for Unincorporated Yolo County

Short-Term Tasks (1991-1995)	Schedule	Cost
• Incorporate Cal Trans specifications as appropriate.	January - June 1993	
• Promote and monitor the use of rubberized asphalt surface on county streets and highways.	July 1993 - ongoing	
• Promote the use of crumb rubber in the private sector.	January 1994 - ongoing	
• Evaluate and monitor rubberized asphalt applications.	January 1994 - ongoing	
D) Tire Shredding/TDF		
• Identify the existing tire shredding operations and potential markets for the tire chips in the surrounding area.	January 1992 - ongoing	
• Work with existing shredding operators to develop markets for tire chips that are consistent with AB 1843.	April - June 1992 - ongoing	
• Evaluate and monitor program.	January 1993 - ongoing	
• Monitor CIWMB reports regarding feasibility of TDF.	Ongoing	
E) Whole Tire Incineration		
• Investigate opportunities for whole or shredded tires as feedstock for incineration.	January 1992	
• Determine handling and transportation methods and costs.	January 1992	
• Identify suitable site for "stockpiling."		
• Determine diversion credits available; identify avoided costs of landfilling.		

Table 6-10 (Continued)
Summary of Special Waste Program
Implementation for Unincorporated Yolo County

Short-Term Tasks (1991-1995)	Schedule	Cost
• Develop long-term contract for incineration of scrap tires.		
• Monitor and evaluate program annually.		
• Implement TDF/shred program as required as an alternative to incineration.		
White Goods		Cost to be determined
• Establish the level of involvement. Determine if the County will collect, repair, and dismantle the white goods, sell recovered scrap metal, or have a private contractor perform some or all of the required services.	July 1992	
• Depending on the County's role in the white goods program, one or more of the following tasks will be required:	July 1992	
- Establish collection program for county residents.		
- Establish a drop - off center at Esparto		
- Establish storage area.		
- Develop repair and/or dismantling program.		
- Educate public on repair program.		
- Obtain private contractor to handle some or all of the tasks required in the white goods program.		
• Begin ongoing white goods program.	October 1992 - ongoing	
• Educate the community regarding the availability of the selected program.		

Table 6-10 (Continued)
Summary of Special Waste Program
Implementation for Unincorporated Yolo County

Short-Term Tasks (1991-1995)	Schedule	Cost
• If private contractor is responsible for the repair and dismantling of the hazardous components, monitor the contractor's operation periodically to ensure that the hazardous materials are removed and disposed of properly.	October 1992 - ongoing	
• Evaluate and monitor program.	January 1993 - ongoing	
Wood Waste Recovery		First Year: $1,000
• Determine current amount and types of wood being discarded, including tree stumps and furniture.	January 1992	Annual: $500
• Identify potential reusers/recyclers.	January - March 1992	
• Participate in chipping/grinding program for landscape material, sludge, alternative daily cover and soil amendment products.	March 1992	
• Develop public education campaign to promote repair and reuse of furniture and sale of chipped product.	March - September 1993	

6.6 MONITORING AND EVALUATING THE UNINCORPORATED COUNTY'S SPECIAL WASTE PROGRAMS

The monitoring and evaluation process is critical to the planning process. The programs recommended in the special waste component will require periodic review to ensure that the anticipated diversion goals are being achieved. Section 18733.6 of the AB 939 regulations (Title 14 CCR Division 7, Chapter 9, Article 6.2) outlines the requirements of the monitoring and evaluation section. The following discussion identifies the data needed for monitoring the programs, the criteria to be used for evaluation, the techniques and frequency of the monitoring, the entities responsible for evaluation, and contingency measures to be implemented if programs do not fulfill the expectations.

6.6.1 Data Needs

Construction and Demolition Debris

Data needs for monitoring the construction and demolition debris program include:

- Estimates of asphalt and concrete disposed of at the YCCL
- Estimates of amounts used at YCCL for winter road construction
- Estimates of asphalt and concrete disposed of as clean fill
- Estimates of asphalt and concrete required for county construction projects
- Estimates of asphalt and concrete required for projected private construction projects
- Estimates of asphalt and concrete recycled at batch plants by private contractors

Tires

Data needs for monitoring the tire program include:

- Estimates of tires from the unincorporated county disposed of at the YCCL
- Estimates of tires to be used in "physical reuse"

- Estimates of tires required for county departments
- Estimates of retread tires used by county departments
- Estimates of private- and public-sector use of retread tires
- Estimates of tires transferred to private vendors for reuse, retreading, transformation, or bulk sale

White Goods

Data needs for monitoring the white goods program include:

- Estimates of quantity and type of goods from the unincorporated county disposed at YCCL
- Estimates of quantity and type of goods to be collected during a public collection program for the unincorporated county
- Estimates of quantity and type of goods repaired, recovered as scrap, and landfilled
- Estimates of quantity and type of hazardous material removed
- Estimates of quantity, type, and disposition of parts recovered from goods
- Identification of end-user groups/markets for scrap goods
- Coordinating data needs with public information survey to assess public awareness

Wood Debris Recovery

Data needs for monitoring the wood debris recovery program include:

- Estimates of quantity and type of wood debris generated in the unincorporated county including furniture, tree stumps, and lumber
- Estimates of quantity sold, chipped, given away, and landfilled of each material type
- Identification of end-user groups/markets

6.6.2 Monitoring Techniques and Programs

The specific monitoring activities selected for the unincorporated county to effectively evaluate the special waste programs are described below. The activities are designed to obtain data useful

in measuring the success of the special waste programs both quantitatively and qualitatively. The programs are designed to target data that are possible to obtain and cost- effective to collect. Descriptions of the monitoring activities are as specific as possible to ensure a thorough monitoring program.

Construction and Demolition Debris

Program monitoring will be performed using the following methods.

Written Records. Written records of the Department of Public Works and Transportation will be reviewed annually to identify the number of paving contracts issued specifying the use of recycled asphalt or concrete. The tonnage of recycled asphalt and concrete used in paving contracts will be compared with the overall tonnage of material in order to determine the extent of participation. Department of Public Works and Transportation records will also be reviewed to quantify the asphalt and concrete debris delivered to an asphalt plant or building materials company for recycling, or used as clean fill or on landfill winter roadway projects. Community Development Department records will be reviewed to determine the amount of asphalt and concrete that were diverted to recycling operations from private contractor projects.

Survey. Contractors and/or commercial haulers (as appropriate) will be surveyed annually to identify the level of private-sector participation in recycling activities. Tonnages of asphalt and concrete debris diverted from the landfill to recycling operations, and the quantity of recycled material used by contractors in new construction will be determined if data are available.

Waste Sort. As part of the annual update to the waste characterization study, the county will determine the quantity and types of construction and demolition debris being generated, disposed and diverted. The county will ensure that the amounts of concrete and asphalt are identified separately during this study. Additional material (such as sheetrock and steel reinforcements) may be identified for diversion programs at that time.

Tires

Program monitoring will be performed using the following methods.

Tire Retreading. Written purchasing records will be reviewed annually to determine the number of tires purchased and the percentage of those that are retread tires. Written records will also be reviewed to determine the quantity of worn tires being sent to a retread service rather than to landfill, and the quantity of tires sold to a distributer for resale. Specific county departments that purchase tires will be surveyed annually to determine their level of participation in the retreading program. In addition, as part of their source reduction efforts, the county may conduct a limited survey of residents, businesses, and industries to determine the level of retread tire use.

Tire Reuse Program. The written records of the county's tire reuse program will be reviewed annually to establish the effectiveness of the program. The number of tire reuse projects and the quantity of tires reused will be counted on an annual basis. In order to provide information to the unincorporated county, a limited survey of businesses and industries may be conducted on the local level.

Crumb Rubber. The written records of the Department of Public Works and Transportation will be reviewed annually to identify the number of paving contracts specifying the use of rubberized asphalt. The tonnage of rubberized asphalt used in paving contracts will be compared with the overall tonnage of asphalt used to determine the extent of participation. In addition, other county applications of crumb rubber, such as recreational field surfaces, will be reviewed.

Tire-Derived Fuel. Records are kept and reviewed to determine the quantity of tires diverted for fuel.

Whole Tire Incineration. If a program is initiated, records will be kept and reviewed to determine the quantity of tires diverted to incineration from the unincorporated county. This figure will not contribute to the diversion goals in the short term. However, records supplied

from the incineration plant will help to estimate recycling credits for the unincorporated county in the short term and diversion credits after 1995.

Records of the quantity diverted to incineration will help establish the waste stream volume reduction, any avoided landfill costs, and, diversion credits toward the 50 percent goal of January 1, 2000.

Waste Sort. As part of the annual update to the waste characterization study, the County will determine the quantity of tires being generated, disposed (landfilled and incinerated) and diverted. This will determine the credits available for transformation activity in the medium term.

White Goods

Program monitoring will be performed using the following methods.

Survey. Scrap dealers will be surveyed to determine the number or tonnage of white goods used as scrap and the amount of hazardous material being removed from the goods.

Written Records. Department of Public Works and Transportation records will be examined to identify the amount of white goods being diverted to scrap dealers. Records of the bin transfer operation and annual collection drop-off program will be examined to determine how many white goods are disposed and diverted.

Waste Sort. As part of the annual update to the waste characterization study, the county will determine the quantity and types of white goods being generated, disposed and diverted.

Wood Debris

Program monitoring will be performed using the following methods.

Written Records. The records of Valley By-Products will be examined to determine the amount and type of wood debris being processed, the amount sold as landscape material, the amount diverted for "hog fuel," and amounts being used as alternative daily cover. Records of the bin transfer operation will also be examined.

Waste Sort. As part of the annual update to the waste characterization study, the county will determine the quantity and types of wood debris being generated, disposed and diverted.

6.6.3 Evaluating Program Effectiveness

Program effectiveness can be evaluated based on quantitative measures such as the program's ability to divert waste from the landfill and qualitative measures such as the availability of the services to waste generators. A specific set of criteria is used to measure program effectiveness in Yolo County. The criteria should help Yolo County identify areas where improvements are required. The criteria are described below.

1. Were the anticipated special waste diversion objectives attained?

2. Did the responsible entities execute the tasks required?

3. Were the tasks implemented on schedule?

4. Were all recovered materials successfully marketed/used?

5. Is the cost per diverted ton within reason?

6. Were all activities executed in an environmentally acceptable and approved manner? Do the special waste program activities meet or exceed all local, state, and federal regulations?

7. Were targeted hazardous materials diversion objectives met?

Each criterion will be applied to each special waste activity: construction and demolition debris, white goods recovery, wood debris recovery, and tire management. The county will consider contingency measures for those criteria that receive negative responses. Section 6.6.6 describes those contingency measures.

6.6.4 Parties Responsible for Monitoring

Programs implemented using a multijurisdictional approach will be managed and monitored by the appropriate entity and will reflect the generation and diversion of Yolo County's special wastes. The Yolo County Department of Public Works and Transportation will be responsible for evaluating the programs for the unincorporated county and reporting the programs' progress.

6.6.5 Funding Requirements

The monitoring and evaluating cost for each special waste program assumes approximately 120 hours of staff time or about $3,400. The funding will be provided through the Sanitation Enterprise Fund.

6.6.6 Contingency Measures

Not only will the monitoring and evaluation process identify programs that do not meet their goals, but where programs do meet the goals, the process can also pinpoint areas that can be improved beyond the established goals. Contingency measures to improve special waste programs in Yolo County are described below.

1. If the special waste diversion objectives are not attained, the county will consider implementation of the following:

- Survey the sectors involved to identify the reasons for the lack of program success
- Increase incentives through legislation, regulation, and disposal rates
- Increase the education program in terms of frequency and/or number of targets
- Revise objectives to reflect more realistic environment.

2. If required tasks are not executed by the responsible entities, the county will consider implementation of the following:

   - Revise job and task descriptions
   - Reestablish coordination among county divisions
   - Reevaluate county staffing adequacy
   - Identify reasons for lack of private-sector participation.

3. If tasks are not implemented in a timely manner, the county will consider implementation of the following:

   - Examine factors affecting program implementation
   - Reevaluate Yolo County staffing adequacy
   - Revise job and task descriptions
   - Revise implementation schedule as necessary
   - Reestablish coordination among county divisions
   - Identify reasons for lack of private-sector participation.

4. If markets/end-users prove inadequate, the county will consider implementation of the following:

   - Perform market survey to determine problems with, or constraints to, marketing/using recovered materials
   - Investigate cost effectiveness of end-use alternatives
   - Explore alternative markets and end-uses
   - Increase market outreach, education, promotion, and advertising

- Investigate marketing and coordination with other jurisdictions to improve materials salability
- Investigate other county procurement policies to support markets.

5. If the cost per diverted ton is not within a reasonable range, the county will consider implementation of the following:

   - Review operating and maintenance plan for the program to identify ways to reduce expenses
   - Investigate markets for recovered materials
   - Modify or discontinue program.

6. If some aspect of the special waste program does not meet local, state, or federal regulations, the county will consider implementation of the following:

   - Identify the problems in materials and programs
   - Correct problems to meet local, state, and federal regulations, as needed, including termination of program.

7. If hazard minimization of white goods does not occur prior to disposal or shredding, the county will consider implementation of the following:

   - Identify the reason why the hazardous elements are not being removed and disposed properly
   - Increase incentives through legislation, regulation, and disposal rates
   - Provide increased access to technical assistance for the party responsible for dismantling the hazardous elements prior to disposal
   - Monitor program more closely and/or more frequently, perhaps through coordination with County Environmental Health Division of the Health Services Agency.

SECTION 7

EDUCATION AND PUBLIC INFORMATION COMPONENT

SECTION 7
EDUCATION AND PUBLIC INFORMATION COMPONENT

The Education and Public Information (EPI) Component is an integral part of the four main SRRE components (source reduction, recycling, composting, and special wastes). Public education is one of several very important means to accomplishing the specific objectives outlined in each of those components.

This EPI component compiles the individual education programs from the four main components. The education activities for a variety of programs discussed here will be handled by the Waste Reduction/Recycling Coordinator from the Yolo County Department of Public Works and Transportation. This component highlights the breadth and scope of activities needed to support the unincorporated area's waste reduction programs in conjunction with other jurisdictions within the county.

In order to comply with AB 939's ambitious waste reduction goals, the county will need to develop and nurture an effective and ongoing education and public information campaign for residents and businesses in the unincorporated areas of the county. The EPI component addresses strategies and activities to promote community participation in county waste diversion programs. For a successful program, the county needs to promote changes in behavior among all residents and businesses by regularly reinforcing waste diversion concepts. This change will occur if community leaders with an understanding of waste management problems and solutions commit to the programs. The program's emphasis centers on education rather than training. Public education efforts in some cases will be difficult to target solely to residents of the unincorporated areas and will be coordinated with the cities as appropriate.

7.1 OBJECTIVES

The general objectives of the EPI component are to increase awareness of, and participation in, the programs described in the previous component sections, as well as to heighten awareness of solid waste disposal issues. More specifically, this includes promoting the concepts and programs of source reduction; giving a higher profile to both the existing and proposed recycling programs; promoting yard waste composting; and promoting the overall safe handling and disposal of solid waste in the unincorporated county. The activities are scheduled to be implemented in the short-term (1991 through 1995). Experience has shown that effective public education is an important factor in the success of waste diversion strategies. Certain public education measures are needed only at the start of a given program, while others require ongoing efforts. The county anticipates maintaining at a minimum, the following level of public education effort including:

- Garbage Talk - minimum circulation to 300 readers
- Public events/fairs - target approximately 12 events per year for educational outreach
- Parks recycling program - target three county parks for recycling signage
- Handouts/flyers - continue circulation of informational flyers as required
- Call in - continue availability of staff to take phone calls requesting information on recycling programs

Objectives for education and public information on the U.C. Davis campus are discussed in Appendix E.

7.2 CURRENT EDUCATION AND PUBLIC INFORMATION ACTIVITIES

Yolo County has undertaken many significant public education efforts for its recycling and household hazardous waste programs. The county has used print media and public events to foster waste awareness among residents. In 1990 the county spent approximately $4,000 on these education efforts. Current education activities for U.C. Davis are discussed in Appendix E.

Household Hazardous Waste Collection Day. The county has focused most of its education and public information activities for the residents of the unincorporated areas on promotion of household hazardous waste collection days. In 1990, and again in 1991, the county sponsored four collection days in three different cities: Woodland, Davis, and West Sacramento. These collection sites were open to residents of the unincorporated areas. Public outreach and education for the hazardous waste collection programs was funded largely by the county. The county advertised the collection days in the Woodland Daily Democrat, the Davis Enterprise, the Winters Express, UC Davis Cal Aggie, and the Sacramento Bee (a special insert for the Yolo County community), on local radio stations, and on cable television. They also printed and distributed 20,000 bilingual flyers (English and Spanish) to school children throughout the county, including the unincorporated areas, announcing the event. The county spent approximately $2,000 advertising these events. Participants in the collection days receive brochures and handouts describing what constitutes a household hazardous waste and what the proper disposal methods are. Information is also distributed describing non-hazardous alternatives that consumers can use. The county conducted four free collection days in 1991, two in Davis and one event each in Woodland and West Sacramento. The County held three household hazardous waste collection day programs during April and May of 1992. They were conducted in Davis, Woodland, and West Sacramento.

For additional information on existing and planned HHW programs for the unincorporated county, please see the Household Hazardous Waste Element.

Garbage Talk. The Yolo County Department of Public Works and Transportation began publishing a quarterly newsletter entitled "Garbage Talk" in January 1991. The newsletter contains a wide assortment of fun recycling trivia and enlightening columns on waste management issues covering specific material types and markets, as well as updates on ongoing waste reduction efforts and events in the county. The newsletter is currently circulated to all county offices, with plans to expand the circulation to include regional city offices, businesses, schools, and residences in the county. A collection of prior issues is included in Appendix D.

Public Events and Fairs. The Department of Public Works and Transportation currently distributes information and answers questions at various events throughout the county. Approximately twelve events a year are targeted to reach specific audiences. A booth is set up and different flyers and brochures are distributed to the general public. Examples in 1990 included a booth at the Yolo County Fair, Earth Day booths in Davis and Woodland, and an annual booth at UC Davis' Picnic Day held during the spring.

Yolo County Parks Pilot Recycling Program. Aluminum cans and glass bottle recycling are targeted for three county parks. Campers and visitors to the parks will see specially designated 55-gallon drums for depositing their recyclables. This program is designed to reinforce habits formed at home or in the workplace and educate residents about the need to recycle whenever possible. It will also serve to reinforce the county's commitment to recycling for the general public and other county departments. As part of this program, all signs for the program will be bilingual (English and Spanish). The county has applied for a grant from the Department of Conservation to assist them with this program.

Handouts/Flyers. The county has developed various information sheets describing the location and the types of commodities accepted at all recycling centers. Tips are included about how to prepare or sort the materials as well as the types of items that are not accepted. These materials are distributed at fairs and events held throughout the county, to persons participating in landfill tours, and anyone calling the Department of Public Works and Transportation requesting it.

Waste Acceptance Control Program (WACP). All landfill patrons are notified of the WACP upon entry into the landfill. An information sheet is given to each patron listing various materials not accepted at the landfill because of their hazardous nature. Additional information is given about scheduled household hazardous waste collection days and methods of storing and transporting some of those wastes. There is also a listing of recyclable items and the recycling center that accepts them.

Esparto Convenience Center. In June 1991 the county announced the expansion of the Esparto Transfer Station activities to include a recycling center. This facility services the residents in

western Yolo County and Capay Valley and educates and reinforces the county's commitment to recycling. The opening of the new center was announced to all community organizations and the general public. Materials accepted include newsprint, glass (sorted by color), plastic (HDPE and PETE), and aluminum.

Call In. The Department of Public Works and Transportation currently receives inquiries from the public about recycling issues. Staff is available to take the calls and direct callers to drop-off and buy-back centers, and tell them about other programs in the area such as the household hazardous waste collection days, and the waste acceptance control program.

7.3 SELECTION OF EDUCATION AND PUBLIC INFORMATION PROGRAMS

When selecting education activities for implementation, it is important to consider options that apply only to their particular component, as well as those that apply to all components. Careful integration of all suggested programs can prevent duplication and can decrease costs.

7.3.1 Public Education Techniques

For a specific public education activity, there may be more than one technique used to accomplish the objective. For example, informing residents about an existing drop-off center could be done using local media, bill stuffers, school programs, or some combination of these.

As programs and activities come on-line, the unincorporated county will implement (or has already implemented) the following education and public information techniques. Each technique is briefly discussed. To further enhance the circulation of public education materials, the county solicits assistance from the local League of Women Voters, and local city offices (i.e. fire departments). With the advent of the Waste Board's material exchange program (referred to as CALMAX) appropriate county public education techniques will include references to, and descriptions of the CALMAX program.

Newsletter

The county has developed a newsletter entitled "Garbage Talk" to announce all of the county and the cities' waste reduction efforts and is examining the feasibility of distributing it to all residents of the county including the unincorporated areas. The program has been in effect since January, 1991, covering a wide range of topics. Specific future topics could include handling and disposal of recyclables, business source reduction efforts, school recycling programs, and updates on diversion levels being achieved throughout the county. By raising the consciousness of the community, it is anticipated that Garbage Talk will enjoy increased readership, possibly included as an insert in the local papers to reduce mailing costs.

Internship Program

The county will investigate creating an internship program coordinated with local high schools and U.C. Davis to provide low-cost staffing for many of the public education activities. This would provide training opportunities and community service hours that are often required at schools.

Waste Reduction Curricula

Many school curricula materials relating to waste reduction are available from the state and federal government as well as through private interest groups such as the Institute for Local Self-Reliance. The county will assist school district staff in identifying and evaluating available curricula for local application. Local organizations (e.g., PTA, Teachers Association, etc.) can also participate in obtaining and evaluating existing curricula that best fit the needs of the unincorporated county's students. The State Department of Education, in conjunction with the California Integrated Waste Management Board, is developing material to teach source reduction, recycling, and integrated waste management in schools. The local schools could further participate by organizing a science fair on waste reduction to promote the education and public information program or a poster contest on recycling/waste reduction. The benefits of

developing waste reduction curricula are numerous; particularly important is their ability to reach an often untargeted group -- children.

Public Service Announcements

Public Service Announcements (PSAs) on local radio and cable TV stations can be developed to endorse recycling efforts. Because environmental awareness has become a central issue of the 1990s, local celebrities may welcome the opportunity to be involved. PSAs provide high-visibility to a program. Yolo County will pursue use of PSAs to advertise programs and educate residents on the benefits of source reduction and recycling.

Local Media Participation

Yolo County will work with local print media (newspapers and magazines) to write or use county developed news stories about the local waste management efforts. The county may identify potential story lines for the media to write. The county will investigate local media interest in publishing a weekly, or monthly "recycling tip sheet" column.

The unincorporated county may investigate working with local cable channels to develop a minidocumentary on recent recycling efforts. The final product could include a video which could also be shown to community groups, schools and other institutions. The use of local cable could potentially be expensive relative to the audience reached, and a careful study would be undertaken before committing any major resources.

Mailings/Handouts

The county will continue to use print material as handouts at local events and fairs. Information sheets describing programs will be developed for each generator group as appropriate. In addition, the county will investigate different mail distribution opportunities such as utility bill inserts, business license renewals, tax collector and animal control mailings.

Speakers Bureau

A speakers bureau specializing in integrated waste management topics will be established to make presentations to community organizations, business groups, and schools. Potential speakers such as recycling program operators, county and city coordinators, and local business representatives will be approached to staff the speakers bureau.

Telephone Information

The county will continue to answer calls from the public. They provide information regarding the buy-back and drop-off centers, the disposal options for different wastes, and, upcoming events such as household hazardous waste collection days.

Workshop/Seminars

The county can provide technical and informational assistance to businesses and residents by conducting workshops, seminars, and public demonstrations focusing on source reduction, recycling, and composting topics. These activities may be best executed in cooperation with the cities. Waste evaluations and subsequent technical assistance can be provided as a joint service. Volunteers who are experts in the appropriate fields can be an invaluable resource for this program. Technical assistance activities are further discussed and evaluated in Section 3.0, Source Reduction Component.

Consumer Information

The county can provide consumer information to residents of the unincorporated areas through a variety of means, including local advertising, bill inserts, etc. Information can cover many aspects of source reduction and recycling, from explaining the county's general planning process under AB 939, to providing tips on shopping practices that promote source reduction, such as reuse of containers and packaging and buying in bulk in order to minimize packaging. The county will cosponsor an environmental shopping campaign with the cities which would reach

all residents of the county. The county could work with the cities to draw on information developed by the state or public interest organizations to implement educational programs at all levels that provide perspective on refuse generation and disposal issues in general, and on source reduction and recycling in particular. The county can encourage employers (many of the residents of the unincorporated areas work in the cities) to provide information to workers regarding source reduction and recycling both at work and at home.

7.4 PROGRAM IMPLEMENTATION

The objective for public education is to increase understanding and change individual waste management practices. Everyone has particular practices that generate waste in the home or the work setting. The public education programs are tailored to address these wastes and practices. For this reason, specific categories of waste generators will be targeted:

- Residential
- Commercial/Industrial
- Self Haul

Residential generators, which include single and multifamily units, are the largest single category of waste generator (approximately 43%) in the unincorporated county. Education and public information strategies are planned to target residential generators for participation in source reduction, recycling, and composting.

Commercial and industrial generators combined contribute approximately 53% to the unincorporated county's waste stream. This category includes restaurants, offices, retail stores, warehouses, supermarkets, and other commercial ventures. Although most of the major businesses are located in the cities, they serve residents of the unincorporated areas. Purchases made by unincorporated county residents at city businesses contribute to unincorporated county waste (e.g., if an unincorporated county resident buys a product that is excessively packaged from a city business, that packaging will end up in the unincorporated county's waste stream).

Therefore, county public education efforts targeted at helping businesses reduce their waste will contribute to waste reduction in the unincorporated county.

Institutions such as schools also contribute a large percentage of waste. These generators are planned to be targeted for source reduction and recycling education activities.

Included in commercial generators is the local government. This would include the county offices within the city of Woodland. Although not always one of the larger producers of waste, the local government sets an example for waste reduction efforts. This group is planned to be targeted for source reduction, composting, recycling, and construction demolition debris education activities. These activities should be coordinated with the city of Woodland's public education efforts, although the County is responsible for its offices in the city.

The final group to be targeted are self-haulers of waste. Although a relatively small contributor to the waste stream (4 percent), their knowledge of and participation in some reduction and recycling activities is important to assuring a comprehensive education program. This generator group will be targeted in the efforts of both the residential programs and the business/commercial programs.

Implementation of selected education activities for the U.C. Davis campus are included in Appendix E.

7.4.1 Summary of Education and Public Information Programs

For each of the waste generator categories, a matrix, illustrated as Table 7-1, was developed that outlines specific education activities, implementation techniques, costs, and implementation schedules.

Educational activities in the matrix are the tasks that Yolo County will complete by itself or coordinate in conjunction with other jurisdictions of the county. The costs are given for each SRRE component's programs and the broad range of techniques necessary to implement the

program. The costs reflect an estimate of the staff time necessary to develop, implement and monitor the programs. No publishing or other vendor related costs are included. Costs listed in the matrix are generalized and expressed in ranges, due to some uncertainty in the actual means of implementation and techniques to be employed, and, the related staff time required.

All activities will be implemented by the Yolo County Department of Public Works and Transportation. The implementation schedule lists all options as being implemented in the short-term with specific milestone dates.

The programs will use a variety of techniques to educate the targeted generator. Each of these techniques has been discussed earlier in Section 7.3, Selection of Education and Public Information Programs. The following table includes a key to the techniques possible for each activity. The listed activity's techniques are not considered exhaustive, but an indication of the possible combination of techniques the county could employ.

The schedule as shown in the table reflects some programs that are currently in place. These will be continued ("ongoing"). Other education programs are timed to begin in coordination with the tasks as outlined in the specific SRRE component.

Table 7 - 1
EDUCATION AND PUBLIC INFORMATION ACTIVITIES
Targeted Generator: **Residential/Self-Haul**

PROGRAMS	EDUCATION ACTIVITIES	EDUCATION TECHNIQUES	ANNUAL COST*	IMPLEMENTATION SCHEDULE
Source Reduction				
Technical Assistance	Provide technical assistance and information to the community.	W/S	$3,400	Ongoing
	Educate residents about backyard composting tips and techniques.	W/S, N,		March - July 1992; Ongoing
	Educate residents of the unincorporated county about the environmental issues regarding disposable diapers and the alternatives including available diaper services.	W/S, N, P, M		Sept. 1992 - June 1993; Ongoing
	Inform residents of the options available for reuse of used clothing and textiles at local facilities.	N, P, W/S		Sept. 1992 - June 1993; Ongoing

N = Newsletter
L = Local Media (Newspaper, Radio)
M = Mailings/Handouts
W/S = Workshops/Seminars
P = Public Service Announcements
S = Speakers Bureau
T = Telephone Information

* A loaded rate of $28.00/hr. for the coordinator and $32.00/hr. for senior management was used to calculate annual costs

Table 7 - 1 (Continued)
EDUCATION AND PUBLIC INFORMATION ACTIVITIES
Targeted Generator: **Residential/Self-Haul**

PROGRAMS	EDUCATION ACTIVITIES	EDUCATION TECHNIQUES	ANNUAL COST*	IMPLEMENTATION SCHEDULE
Recycling				
Drop-off/Buy-Back Centers	Educate residents about locations, times, and accepted materials.	P, N, M, W/S	$1,200	Ongoing
Bin-Transfer	Promote source separation of self-haul wastes and use of the bin-transfer operation at YCCL.	P, N, M, W/S	$1,200	October 1994; Ongoing
Composting				
Yard Waste	Promote usage and location of yard waste at YCCL.	W/S, P, L, N	$1,200	October 1992; Ongoing
	Promote availability, use, and quality of finished compost product.	P, L, N		October 1992; Ongoing
Special Waste				
Tires	Promote alternatives for waste tire disposal, such as reuse and retread.	N, L	$600	January 1992 - Ongoing
White Goods	Educate residents about the benefits of recycling white goods.	N, L, T, P	$1,200	Oct. 1992 - Ongoing

N = Newsletter
L = Local Media (Newspaper, Radio)
M = Mailings/Handouts
W/S = Workshops/Seminars
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T = Telephone Information

* A loaded rate of $28.00/hr. for the coordinator and $32.00/hr. for senior management was used to calculate annual costs

Table 7-1 (Continued)
EDUCATION AND PUBLIC INFORMATION ACTIVITIES
Targeted Generator: **Residential/Self-Haul**

PROGRAMS	EDUCATION ACTIVITIES	EDUCATION TECHNIQUES	ANNUAL COST*	IMPLEMENTATION SCHEDULE
White Goods (continued)	Notify residents of management options including repair facilities, donation facilities, and the drop-off options at YCCL.	N, L, T		Nov. 1992 - Ongoing
Wood Debris	Educate residents about benefits of reuse of scrap lumber. Educate residents about benefit of separating wood from self-haul loads.	N, L, T N, L, T	$600	January 1992 - Ongoing

N = Newsletter
L = Local Media (Newspaper, Radio)
M = Mailings/Handouts
W/S = Workshops/Seminars
P = Public Service Announcements
S = Speakers Bureau
T = Telephone Information

* A loaded rate of $28.00/hr. for the coordinator and $32.00/hr. for senior management was used to calculate annual costs

Table 7 - 1 (Continued)
EDUCATION AND PUBLIC INFORMATION ACTIVITIES
Targeted Generator: **Commercial/Industrial**

PROGRAMS	EDUCATION ACTIVITIES	EDUCATION TECHNIQUES	ANNUAL COST	IMPLEMENTATION SCHEDULE
Source Reduction				
Technical Assistance	Educate business about commercial site-of-generation composting.	W/S, L, M	$2,800	September 1991 - March 1992;Ongoing
	Develop an employee education campaign to encourage at-work and at-home source reduction practices.	N, W/S, M		March - June 1993; Ongoing
	Inform educators and promote the availability of source reduction and recycling curricula from state and public interest groups.	W/S, T, W		April 1993 - Ongoing
	Provide technical assistance and information to area businesses.	W/S, M		Ongoing
Recycling				
Mixed Waste Materials Recovery Facility	Educate haulers about program and facility design capabilities.	W/S, T, L, M	$1,200	June 1997
	Provide periodic recycling program updates.	K, W/S, N		January 1998

N = Newsletter
L = Local Media (Newspaper, Radio)
M = Mailings/Handouts
W/S = Workshops/Seminars
P = Public Service Announcements
S = Speakers Bureau
T = Telephone Information

* A loaded rate of $28.00/hr. for the coordinator and $32.00/hr. for senior management was used to calculate annual costs

Table 7-1 (Continued)
EDUCATION AND PUBLIC INFORMATION ACTIVITIES
Targeted Generator: **Commercial/Industrial**

PROGRAMS	EDUCATION ACTIVITIES	EDUCATION TECHNIQUES	ANNUAL COST	IMPLEMENTATION SCHEDULE
Commercial Collection	Educate businesses about setting up recycling programs.	W/S, S, M	$1,200	April 1992; Ongoing
Office Paper Recycling	Promote availability of technical assistance for developing programs.	W/S, N, L	$1,200	January 1992 - Ongoing
	Educate office workers on the WOW program.	W/S, N, S		Ongoing
Purchase Preferences	Educate office managers and department heads about the preferred product policy.	N, W/S	$600	Ongoing
Composting				
Yard Waste Composting	Educate businesses and county departments, such as Parks and Recreation, about uses, availability, and quality of compost product.	W/S, N	$600	October 1992; Ongoing
	Promote separation of institutions'/businesses' yard waste for composting at the central facility.	W/S, N, L, S		October 1992; Ongoing

N = Newsletter
L = Local Media (Newspaper, Radio)
M = Mailings/Handouts
W/S = Workshops/Seminars
P = Public Service Announcements
S = Speakers Bureau
T = Telephone Information

* A loaded rate of $28.00/hr. for the coordinator and $32.00/hr. for senior management was used to calculate annual costs

Table 7-1 (Continued)
EDUCATION AND PUBLIC INFORMATION ACTIVITIES
Targeted Generator: **Commercial/Industrial**

PROGRAMS	EDUCATION ACTIVITIES	EDUCATION TECHNIQUES	ANNUAL COST	IMPLEMENTATION SCHEDULE
Special Waste				
Asphalt and Concrete	Educate commercial consumers about recycled material options.	N, M, W/S, S	$1,200	January 1992 - Ongoing
	Educate county departments about policy changes and options for use and recycling.	N, W/S		April 1992; Ongoing
	Educate Community Development Department about opportunities to encourage use of recycled materials in private construction projects.	N, W/S		April 1992; Ongoing
	Promote reuse options.	L, N		
Tires	Educate generators about the importance of proper waste tire management.	L, N, P		January - March 1992; Ongoing (all tasks)
	Educate potential in-house whole tire users about the availability and possible uses for whole tires in county projects.	N, W/S		
	Inform generators about the whole tire reuse program and potential tire reuse options.	N, L, P		

N = Newsletter
L = Local Media (Newspaper, Radio)
M = Mailings/Handouts
W/S = Workshops/Seminars
P = Public Service Announcements
S = Speakers Bureau
T = Telephone Information

* A loaded rate of $28.00/hr. for the coordinator and $32.00/hr. for senior management was used to calculate annual costs

Table 7-1 (Continued)
EDUCATION AND PUBLIC INFORMATION ACTIVITIES
Targeted Generator: **Commercial/Industrial**

PROGRAMS	EDUCATION ACTIVITIES	EDUCATION TECHNIQUES	ANNUAL COST	IMPLEMENTATION SCHEDULE
Tires (continued)	Promote use of retread tires on vehicles.	P, N, L		
	Promote potential uses of crumb rubber products.	N		
White Goods	Educate generators about the importance of white goods recycling/hazard minimization.	K, L, P, M	$600	October 1992; Ongoing (all tasks)
	Promote alternative management options including repair and resale facilities.	N, M		
Wood Debris	Educate businesses on benefits of source separation.	N, M, W/S	$600	1st Quarter 1992 - Ongoing
TOTAL ANNUAL COSTS			$21,700	

N = Newsletter
L = Local Media (Newspaper, Radio)
M = Mailings/Handouts
W/S = Workshops/Seminars
P = Public Service Announcements
S = Speakers Bureau
T = Telephone Information

* A loaded rate of $28.00/hr. for the coordinator and $32.00/hr. for senior management was used to calculate annual costs

7.5 MONITORING AND EVALUATION

This section describes the methods to monitor the success of Yolo County's public education programs for the unincorporated areas; the evaluation criteria for determining program effectiveness; the parties responsible for program monitoring and evaluation; the funding requirements; and the contingency measures to be implemented if it is determined that the public education program is not achieving its goals. This monitoring program will be performed annually and a report summarizing the progress towards the stated objectives will be prepared.

7.5.1 Methods to Quantify and Monitor Achievement of Public Education Program

The objectives of Yolo County's public education program for the unincorporated areas are to maximize awareness of the programs described in the source reduction, composting, recycling, and special waste components to all residents, businesses, and other waste generators in the unincorporated areas of Yolo County, as well as to heighten overall awareness of solid waste disposal issues.

In order to establish a baseline for monitoring the effectiveness of public education efforts, a telephone or mail survey is planned for the first quarter of 1993. The survey will be used to understand the current level of public awareness of programs available to each appropriate sector within the unincorporated areas of Yolo County. The survey will also be an indicator of the effectiveness of public education techniques (i.e., which techniques were effective, which were not; how people are actually learning about a given program). The survey is planned to be readministered at yearly intervals to assess the changes in the level of knowledge about county activities and waste management activities in general.

7.5.2 Criteria for Evaluating Program Effectiveness

Yolo County plans to evaluate the effectiveness of the public education program for the unincorporated areas by applying the following criteria to each activity:

1. Were all waste generators in the unincorporated areas of Yolo County aware of the source reduction, recycling and composting programs available to them? The existing level of public awareness will be determined by the survey planned for the first quarter of 1992 and each successive year.

2. Did the responsible entities execute the tasks required? The responsible entity is the Yolo County Department of Public Works and Transportation.

3. Were the tasks implemented on schedule? Task timing is shown in Table 7-1 and described in Section 7.4.1.

7.5.3 Parties Responsible for Program Monitoring, Evaluation and Reporting

The survey, program evaluation, and report preparation will be performed by the Department of Public Works and Transportation. The survey report will establish a baseline for the level of public awareness from which to gauge the effectiveness of the EPI component. The Waste Reduction/Recycling Coordinator for Yolo County will oversee all aspects of this program.

7.5.4 Funding Requirements

The funding requirements for the annual monitoring and evaluation program include the staff time required to conduct surveys, to review data and determine program effectiveness, and to prepare a written report summarizing the progress towards meeting public education objectives. The expected cost for these activities is approximately $2,500 per year representing approximately 80 staff hours.

7.5.5 Contingency Measures

Contingency measures will be implemented if the monitoring criteria identified in Section 7.5.2 shows education objectives are not being met.

1. If the anticipated levels of public awareness are not met, the county will consider implementing the following:

   - Using information generated by the annual survey, increase the level of effort for specific identified shortcomings;

   - Reviewing effectiveness of the selected public education techniques; and

   - Revising and expanding public education efforts.

2. If the required tasks are not executed by the responsible entity, the county will consider implementing the following:

   - Reevaluating staff adequacy; and

   - Revising job and task descriptions of employees involved in public education.

3. If tasks are not implemented according to schedule, the county will consider implementing the following:

   - Reevaluating staff adequacy,

   - Revising job and task descriptions of employees involved in public education; and

   - Revising and expanding schedules to reflect changing needs identified by the annual survey.

SECTION 8

DISPOSAL FACILITY CAPACITY COMPONENT

SECTION 8
DISPOSAL FACILITY CAPACITY COMPONENT

The purpose of the Disposal Facility Capacity Component is to review the disposal capacity available to the unincorporated areas of Yolo County at permitted solid waste disposal facilities. The goal is to ensure that adequate landfill capacity is allocated for disposing of solid waste that cannot be diverted through source reduction, recycling, or composting activities. Nonrecyclable wastes, residue from materials recovery operations, and nonprocessible materials and residue from incineration/transformation operations are wastes that will not be diverted from the landfills. A projection of solid waste disposal facility needs has been calculated by estimating the disposal capacity required to accommodate the total solid waste that will be generated by the unincorporated areas of Yolo County during the next 15-year period. As defined in Section 18744 of AB 939 (Sher, Chapter 9/90), the 15-year period begins in 1991 and extends through 2005.

As required by Section 18744 of AB 939, the facility capacity component includes a description of existing permitted solid waste landfills and transformation facilities located in the unincorporated areas of the county and a projection of the county's solid waste disposal facility needs. As required by the regulations, the discussion also covers solid waste facilities that are to be phased out or closed, expanded, or that are newly established, and plans to import or export wastes out of Yolo County. Because U.C. Davis operates its own stand-alone solid waste disposal system, the county has opted to show disposal facility capacity and other data for the U.C. Davis Landfill separately. Disposal information for U.C. Davis can be found in Appendix E. Calculations herein assume that U.C. Davis will initiate "import" of waste to YCCL beginning 1994.

8.1 EXISTING DISPOSAL FACILITIES IN UNINCORPORATED YOLO COUNTY

There is one county-owned and one university-owned permitted solid waste landfills in Yolo County. The county-owned Yolo County Central Landfill (YCCL) provides disposal capacity to the vast majority of the county. The university-owned landfill is the U.C. Davis landfill providing landfill capacity to the university and its functions only. Detailed information on the U.C. Davis facility can be found in Appendix E. Table 8-1 summarizes information on the YCCL, including facility location, owner, operator, permitted site acreage, permitted capacity, current disposal fees, and remaining facility capacity. In addition, Table 8-1 also indicates the communities served by the landfill.

8.2 FUTURE DISPOSAL CAPACITY NEEDS FOR UNINCORPORATED YOLO COUNTY

The projection of solid waste disposal facility needs provides an estimate of the available disposal capacity, in cubic yards per year, through 2005. The disposal needs projection anticipates future solid waste generation in the unincorporated areas of Yolo County over that period. The needs projection is calculated using certain reasonable assumptions about waste management practices and trends over the next 15 years. This needs assessment is a planning tool. The actual capacity needs may vary if these assumptions do not hold true over the 15-year period. The projection of disposal capacity needs will require periodic revision to reflect future diversion rates and the evolving solid waste management environment.

Table 8-1
County-Owned Permitted Disposal Facilities
in Yolo County

Facility Information	Yolo County Central Landfill
Location	Road 28H and 104, Yolo County (4mi. NE City of Davis)
Owner	Yolo County
Operator	Dept. Public Works & Transportation
Landfill classification	Class III
Annual quantity disposed of for FY 1992 (tons per year)	214,000 tons
Waste types (i.e., residential, commercial, special wastes, sludge, asbestos)	Nonhazardous residential, commercial, industrial and self-haul municipal solid waste. The facility does accept dried sludge and liquid wastes.
Overall permitted site acreage	724.5 acres
Proposed permitted daily capacity (1993)	1,800 TPD
Remaining permitted facility capacity (beginning 1993)	17,528,800 cubic yards
Disposal fees for municipal solid waste (MSW)	Refer to Appendix A for a breakdown of disposal fees.
Communities served	Davis, West Sacramento, Winters, Woodland, unincorporated Yolo County, portions of Sacramento and Solano Counties

8.2.1 Determining Disposal Capacity Needs

The projection of disposal capacity needs for the next 15 years is based on the solid waste generation projection conducted in accordance with the Solid Waste Generation Study (SWGS), as set forth in Section 18722, Article 6.1. The disposal capacity needs projection is calculated using the additional capacity equation defined in Section 18744, Article 6.2. Table 8-2 contains the additional capacity equation and definitions of its terms.

For the unincorporated areas of Yolo County, each term used in the equation was defined according to local conditions and current and future solid waste management activities.

8.2.2 Projecting Disposal Capacity Needs

Results from the disposal capacity needs projection are shown in Table 8-3. The capacity needs are shown for 1991 through 2005, and impacts of expanded facilities have been accounted for in the projection. All values are given in compacted, in-place cubic yards of solid waste using an estimated average compacted density of 1,200 pounds per cubic yard.

The disposal capacity calculations indicate that no additional disposal capacity is required for the unincorporated county through 2005.

Table 8-2
Determining Disposal Capacity Needs
for the Unincorporated Areas of Yolo County

Capacity Needs Equation

For Year n:

Additional Capacity = [(G + I) - (D + TC + LF + E)]

Definition of Terms

G = The amount of solid waste projected to be generated in the unincorporated areas of Yolo County.

I = The amount of solid waste that is expected to be imported to the unincorporated areas of Yolo County and disposed of in permitted solid waste disposal facilities through agreement(s) with other cities or counties, or through agreements with solid waste enterprises, as defined in Section 40193 of Public Resources Code.

D = The amount diverted through successful implementation of proposed source reduction, recycling, and composting programs.

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

LF = The amount of permitted solid waste disposal capacity that is available for disposal in the unincorporated areas of Yolo County, of solid waste generated in the unincorporated areas of Yolo County.

E = The amount of solid waste generated in the unincorporated areas of Yolo County that is exported to solid waste disposal facilities through agreement(s) with other cities or counties, or through agreements with solid waste enterprises, as defined in Section 40193 of Public Resources Code.

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

Table 8–3
Additional Disposal Capacity Requirements for Unincorporated Yolo County
(All values are in cubic yards)
(Parentheses indicate negative value)

Capacity Needs Equation	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
G – Solid waste generated	26,912	27,588	28,282	28,942	29,723	30,470	31,237	32,022	32,828	33,653	34,500	35,367	36,257	37,168	38,103	39,062
I – Solid waste imported	331,587	332,192	312,515	312,452	319,512	552,868	556,330	380,385	372,985	365,130	411,978	412,962	424,243	437,000	449,473	615,613
I' – UC Davis waste "imported"	0	0	0	0	9,558	19,347	12,588	11,212	11,485	10,913	10,360	10,473	10,588	10,705	10,823	10,557
D – Solid waste diverted	4,064	4,166	4,271	5,021	5,771	6,521	8,060	9,599	11,138	12,677	14,214	14,571	14,938	15,313	15,699	16,093
TC – Transformation reduction	73	74	75	76	77	78	79	81	82	83	84	86	87	88	90	91
LF – Available permitted disposal capacity	19,037,833	18,685,052	18,351,429	18,018,026	17,668,054	17,075,015	16,486,122	16,075,385	15,672,590	15,279,020	14,839,930	14,399,321	13,946,864	13,481,129	13,002,329	12,357,187
E – Solid waste exported	2,691	2,759	2,828	2,894	2,972	3,047	3,124	3,202	3,283	3,365	3,450	3,537	3,626	3,717	3,810	3,906
AC – Capacity needs*	(18,686,162)	(18,332,271)	(18,017,806)	(17,664,623)	(17,318,081)	(16,481,976)	(15,897,230)	(15,664,649)	(15,269,795)	(14,885,449)	(14,400,840)	(13,958,713)	(13,494,447)	(13,015,374)	(12,523,529)	(11,712,045)

* where AC = (G + I) – (D + TC +LF +E)

Solid Waste Generated

The amount of solid waste generated (G) for each year in the planning period was obtained from the Solid Waste Generation Study (SWGS) prepared by EBA Wastechnologies (1991). The amount of solid waste generated in the unincorporated areas of Yolo County in 1990 (excluding U.C. Davis) was 16,147 tons (26,912 cubic yards) according to the SWGS. Population projections were applied to the 1990 waste generation rate to estimate the future waste generation for the unincorporated areas through the year 2005. The waste tonnages projected in the SWGS were converted to cubic yards by a conversion factor of 1,200 pounds per cubic yard.

Solid Waste Imported

The total amount of solid waste imported (I) into the unincorporated areas of the county (from both in- and out-of-county sources) in 1990 was approximately 199,000 tons (approximately 331,600 cubic yards). The YCCL facility receives all the solid waste generated by the incorporated cities in Yolo County. Portions of Sacramento and Solano Counties imported approximately 44,200 tons (73,600 cubic yards) of solid waste to YCCL in 1990 (Report of Facility Information, August 1992). The total amount of solid waste imported equals the sum of the waste disposal rates for Davis, West Sacramento, Winters, and Woodland, plus imported amounts from Sacramento and Solano. Imported waste figures for 1991 to 2005 from the four cities of Yolo County were taken from those cities' respective Solid Waste Generation Studies. Imported amounts from out-of-county sources were assumed to decrease to a constant 20,000 tons per year (33,333 cubic yards) by 1996 (RFI, August 1992). In addition, it was assumed that the planned West Sacramento McMillan-Bloedel paper mill would import wastes at the following rates:

Table 8-4
Expected Waste Imports from
McMillan-Bloedel Paper Mill

Year	Tons	Cubic Yards
1995	135,780	226,300
1996	135,780	226,300
1997	33,580	55,967
1998	33,580	55,967
1999	33,580	55,967
2000	67,170	111,950
2001	67,170	111,950
2002	67,170	111,950
2003	67,170	111,950
2004	67,170	111,950
2005	158,775	264,625

In addition, U.C. Davis waste is shown as "imported" beginning 1994. U.C. Davis currently uses its own landfill (see Appendix E), however, the county anticipates that the university will transport its wastes to YCCL beginning 1994 at the indicated rates on Table 8-3.

Solid Waste Diverted

The amount of solid waste diverted (D) through successful implementation of proposed source reduction, recycling, and composting programs is obtained from the Waste Diversion Model in

the Integration Component (Section 10). The Waste Diversion Model provides the projected tonnages of waste diverted for 1991 through 2000. For the years 2001 through 2005, the diversion rate (as a percent of the total waste generated in the unincorporated areas of the county) projected for 2000 was assumed to remain constant.

Transformation Facility Reduction

The amount of transformation facility reduction (TC) was 73 cubic yards in 1990. This figure was escalated at 1.5 percent per year through 2005.

Permitted Disposal Capacity

The permitted disposal capacity (LF) available for the unincorporated areas of Yolo County is taken from the RFI, August 1992.

Solid Waste Exported

It was estimated that the communities of Dunnigan and Clarksburg exported (E) approximately 10 percent of all waste generated in the unincorporated county in 1990. This amount was assumed to remain at 10 percent through the planning horizon.

8.3 DISPOSAL FACILITY CLOSURES PLANNED FOR UNINCORPORATED YOLO COUNTY

The Yolo County Central Landfill is anticipated to remain active and operating through the long term planning horizon.

8.4 NEW OR EXPANDED DISPOSAL FACILITIES FOR UNINCORPORATED YOLO COUNTY

No new or expanded disposal facilities are planned for the unincorporated county through the planning horizon.

8.5 PLANS TO EXPORT WASTE TO ANOTHER JURISDICTION

The communities of Dunnigan (northern Yolo County) and Clarksburg (southeastern Yolo County) currently export waste to out-of-county disposal facilities. It is anticipated that these communities will continue to do so in the future. Should conditions change, the YCCL facility has adequate capacity to easily incorporate these waste streams for disposal.

SECTION 9

FUNDING COMPONENT

SECTION 9
FUNDING COMPONENT

Programs outlined in the Source Reduction and Recycling Element will result in Yolo County achieving its waste diversion objectives for the unincorporated areas, as well as managing its waste stream in an environmentally sound manner. However, the program's success requires adequate funding. This may require expanding existing funding sources; for example by increasing waste disposal fees. It may also require that the county look for new ways to fund future programs and facilities.

This section provides information on funding various component programs and facilities. In particular, this section describes the current mechanisms used to fund solid waste management activities in the county; provides cost estimates for the planning, development, implementation, and evaluation/monitoring of component programs; and lists future revenue sources and contingency revenue sources sufficient to support the component programs.

Information on funding of U.C. Davis based programs is provided in Appendix E. The county has no authority nor funds to participate in the funding of U.C. Davis programs.

9.1 CURRENT FUNDING SOURCES

The only source of funding for solid waste management activities in the unincorporated county is the Sanitation Enterprise Fund. This funding source consists of tipping fees paid at the Yolo County Central Landfill. Tipping fee rates and proposed rate increases are developed by the county Department of Public Works and Transportation and approved by the Board of Supervisors. Funding levels of the Sanitation Enterprise Fund for the last three years were as follows:

- FY '90-'91 $3.89 million
- FY '91-'92 $4.56 million
- FY '92-'93 $6.07 million

9.2 ESTIMATED PROGRAM COSTS

9.2.1 Costs

Table 9-1 shows the estimated costs that Yolo County will incur (for the unincorporated county) for program planning/development, implementation, and evaluation/monitoring in the short-term implementation phase. Costs listed in Table 9-1 do not include those costs incurred by private contractors to carry out program services in the unincorporated county. Costs also do not include U.C. Davis programs. Costs and revenues for U.C. Davis programs are summarized in Appendix E.

All known operating and capital costs are included and are based on descriptions set forth in each component's implementation section. Individual program costs include the cost of time spent by the appropriate persons in the Department of Public Works and Transportation.

Several general assumptions were made in preparing the cost estimates:

- All county activities will take place on public land (i.e., there are no land costs included)
- All programs recommended within the individual components will be implemented as previously described
- Equipment and building improvement costs are not amortized; i.e., they are not included in yearly operating expenses
- The annual inflation rate is 5 percent
- Staff time costs are based on current rates as provided by the Department of Public Works and Transportation.

9.2.2 Materials Revenues

The county recognizes that the sale of some recovered materials (particularly through the drop-off, office paper, bin-transfer, and materials recovery facility programs) will generate revenues that can help offset program costs. However, the county also recognizes that the market prices for these materials are inherently volatile and impossible to accurately predict over the short-term planning period. Given this fact, and the likely small contribution that materials sales will make to total program cost, the county will not estimate materials sales revenues at this time. The county will, nonetheless, strive to obtain the most secure and lucrative markets for recovered materials as these programs come on-line, and factor in these secured markets as part of the budgeting process for the selected programs.

Table 9-1

Estimated Program Costs for Unincorporated Yolo County

Program [a]	1992	1993	1994	1995
Source Reduction	$ 25,000	$ 26,300	$ 27,600	$ 28,900
Recycling:				
Drop-offs [b]	$ 20,000	$ 21,000	$ 22,050	$ 23,200
Office paper program [c]	$ 13,400	$ 14,100	$ 14,800	$ 15,500
Bin-transfer [d]	$0	$0	$425,000	$152,300
Composting Program [e]	$ 10,000	$ 10,500	$ 11,000	$ 11,600
Special Waste Program [f]	$ 24,000	$ 13,000	$ 7,700	$ 8,000
Education Program [g]	$ 15,500	$ 16,300	$ 17,100	$ 17,900
Monitoring and Evaluation [h]	$ 5,400	$ 5,700	$ 6,000	$ 6,300
Total:	$113,300	$106,900	$531,250	$263,700

(a) Materials recovery facility not included. If selected, it is anticipated to be on-line in 1997. Estimated capital cost is $10 million. Commercial collections also not included. Costs are primarily educational/promotional and are reflected in the Education Program.

(b) Includes transportation, labor, and maintenance.

(c) Includes labor only.

(d) Includes labor, transportation, and maintenance. First year (1994) cost includes $280,000 capital cost plus $145,000 annual cost.

(e) Does not include one-time signage cost estimated at $2,000.

(f) All special waste programs. 1993 - 1995 costs do not include white goods annual program costs. Program parameters to be determined in 1992 and annual costs will vary depending on that determination.

(g) Does not include source reduction education/promotion activities. These are included within the Source Reduction Program costs.

(h) For all programs. Assumes 160 hours Coordinator's time, 20 hours support staff, 20 hours senior staff.

9.2.3 Additional Solid Waste Staff Resources

In 1991, the county added a full-time Waste Reduction and Recycling Coordinator staff position within the Department of Public Works and Transportation. Funded through the Sanitation Enterprise Fund, this individual joins the other members of the solid waste management staff to carry out the component programs. This new staff position is anticipated to fulfill the unincorporated county's additional management staff requirements for the combined selected programs through the short-term planning period. The county also anticipates an additional staff member to assist the Coordinator with Household Hazardous Waste Element programs implementation.

9.3 FUTURE FUNDING SOURCES

Yolo County will use the Sanitation Enterprise Fund to pay entirely for the planning, development, implementation, and evaluation of its integrated waste management programs and facilities from FY 1990/1991 to FY 1994/1995 for the unincorporated county.

Should there be an unexpected shortfall in funds, the Board of Supervisors will work with the Department of Public Works and Transportation to adjust refuse disposal rates to increase revenues to the Sanitation Enterprise Fund. Any potential increases would be based on the level of funds required to cover program costs. Current and historic Sanitation Enterprise Fund levels are provided in Section 9.1. A limitation to raising disposal rates in the future will be rate payer acceptance. At some level, haulers may find it economically advantageous to dispose of wastes elsewhere. The county will need to maintain its awareness of the local landfill economy to ensure that YCCL disposal rates do not adversely impact the long term integrity of the Sanitation Enterprise Fund.

SECTION 10

INTEGRATION COMPONENT

SECTION 10
INTEGRATION COMPONENT

The integration component for the unincorporated county provides an overview of the programs selected in the source reduction, recycling, composting, and special waste components. The component demonstrates that Yolo County has formulated, through preparation of this Source Reduction and Recycling Element (SRRE), a truly integrated solid waste management system drawing on a wide variety of techniques that will move the unincorporated area towards the 25 percent and 50 percent mandates. The component also contains an implementation table covering all tasks required annually.

10.1 OVERVIEW OF SOLID WASTE MANAGEMENT PRACTICES PLANNED FOR THE UNINCORPORATED COUNTY

The solid waste management programs outlined in the source reduction, recycling, composting, and special wastes components were designed and organized to facilitate successful achievement of integrated solid waste management for unincorporated Yolo County.

Programs were selected based on their position in the integrated waste management hierarchy and on their ability to contribute to the overall diversion goals. Program feasibility and selection were based on the evaluation processes identified in Section 2 and local conditions in the unincorporated county. Programs were tailored to complement one another. The type, source, and quantity of the materials targeted by the different diversion programs were reviewed to ensure that the source reduction, recycling, composting, and special waste programs were compatible. The programs were integrated to achieve the most effective solid waste management plan and to comply with the integrated waste management hierarchy.

The rest of this section outlines the prioritization of programs promoting integrated waste management. By managing the waste stream in the order outlined below, Yolo County will most effectively reduce the amount of waste requiring transformation and disposal through activities that comply with the integrated waste management hierarchy.

Source Reduction

- County government source reduction programs:
  - Waste audits
  - Exploration of a waste exchange program
  - In-house source reduction programs

- Technical assistance, education, and promotion programs:
  - Waste evaluations education/assistance
  - Backyard composting programs
  - Technical assistance program
  - Education program

- Rate structure modification programs:
  - Stratified disposal rate

Recycling and Composting

- Source separated recycling:
  - Drop-off centers
  - Commercial recycling promotion
  - Office paper recovery

- Materials recovery/recycling activities:
  - Bin-transfer operation

- Materials recovery facility operation

- Composting:
  - Yard debris composting

Special Wastes

- Construction and demolition debris recovery
- Tire reuse and recovery program
- White goods recovery program
- Wood debris recovery program

Transformation and Landfill Disposal

- Environmentally safe transformation and landfill disposal of wastes at permitted facilities.

U.C. Davis Programs

- Bargain Barn
- E-mail system
- Inter-departmental programs
- Food service programs
- Double - sided copying
- Central stores reuse program
- Tire salvaging program
- Campus-wide recycling program
- Manure composting program
- Wood/green waste composting program
- Asphalt/concrete program
- Scrap metal reuse program
- Wood waste program

10.2 INTEGRATION OF COMPONENTS

The components were integrated to maximize the diversion potential of all feasible source reduction, recycling, and composting options. Preliminary integration and coordination of program alternatives occurred in the program evaluation and selection stage. The compatibility of programs with other options was considered when recommending the implementation of a program. Most of the integration involved detailed computer analysis via the Waste Diversion Model. The Waste Diversion Model served as a tool to integrate the diversion programs: to identify the best combination of programs, to resolve conflicts between programs, and to signal impractical estimated diversion levels.

10.3 DETERMINATION OF COMPONENT PRIORITIES

Yolo County has set priorities for specific waste management programs within the short-term and medium-term planning periods. The following factors were used to determine priorities and timing among the programs identified in the components:

- Location of the component on the waste management hierarchy (i.e., source reduction, recycling and composting, and transformation and disposal)
- Ranking of the various programs reflected in each component
- Waste stream composition and each program's effectiveness in addressing priority waste types
- Extent to which the program is already used and successfully operating within the unincorporated county
- Compatibility of the program with other programs

Using these factors, components and their diversion programs have been prioritized to best achieve the goals of integrated waste management for the county.

10.4 ACHIEVEMENT OF DIVERSION MANDATES

Yolo County anticipates reaching the diversion mandates through the use of a set of source reduction, recycling, composting, and special waste activities that target specific waste generators and material types. To estimate diversion levels of the overall integrated waste management program, a detailed computer model (Waste Diversion Model) was developed. The Waste Diversion Model was used to calculate the projected diversion rates for each program by material type and integrate projected U.C. Davis diversion levels. The model demonstrates how the programs work together to achieve the diversion goals. The model was iterated ten times to estimate diversion levels for the residential, commercial, industrial, and self-haul, and U.C. Davis waste streams for 1995 and 2000. The programs' estimated diversion levels will help the county gauge its progress in achieving the mandated diversion goals.

The estimated diversion levels developed through the Waste Diversion Model are summarized in Tables 10-1 and 10-2 by program and generator for 1995 and 2000. The diversion levels are estimated in Appendix C by material type for each program and waste generator.

Table 10-1
Projected 1995 Diversion Levels for Unincorporated Yolo County (incl. U.C. Davis)
(Percent of Total Waste Stream)

Programs	Waste Generator					Total
	Residential	Commercial	Industrial	Other	UCD	
Source Reduction:						
U.C. Davis programs	0.0	0.0	0.0	0.0	1.4	1.4
Recycling:						
Drop-off	0.3	0.0	0.0	0.0	0.0	0.3
Office paper recovery	0.0	0.1	0.0	0.0	0.0	0.1
Bin-transfer operation	0.2	0.0	0.0	0.7	0.0	0.9
U.C. Davis recycling	0.0	0.0	0.0	0.0	1.5	1.5
Composting:						
Yard debris composting	0.3	0.6	0.3	0.0	0.0	1.2
U.C. Davis composting	0.0	0.0	0.0	0.0	8.5	8.5
Special Waste:						
County programs	0.3	6.6	1.1	0.0	0.0	8.0
U.C. Davis programs	0.0	0.0	0.0	0.0	9.7	9.7
Total	1.1	7.3	1.4	0.7	21.1	31.6

Table 10-2
Projected 2000 Diversion Levels for Unincorporated Yolo County
(Percent of Total Waste Stream)

Programs	Waste Generator					Total
	Residential	Commercial	Industrial	Other	UCD	
Source Reduction:						
U.C. Davis programs	0.0	0.0	0.0	0.0	1.3	1.3
Recycling:						
Drop-off	0.3	0.0	0.0	0.0	0.0	0.3
Office paper recovery	0.0	0.2	0.0	0.0	0.0	0.2
Bin transfer facility	0.2	0.0	0.0	0.9	0.0	1.1
Material recovery facility	0.0	5.0	1.6	0.0	0.0	6.6
U.C. Davis recycling	0.0	0.0	0.0	0.0	6.6	6.6
Composting:						
Yard debris composting	0.6	2.6	1.0	0.0	0.0	4.2
U.C. Davis composting	0.0	0.0	0.0	0.0	15.8	15.8
Special Waste:						
County programs	0.3	7.2	1.2	0.0	0.0	8.7
U.C. Davis programs	0.0	0.0	0.0	0.0	10.6	10.6
Total	1.4	15.0	3.8	0.9	34.3	55.4

10.5 MEETING THE 15-YEAR DISPOSAL REQUIREMENTS

The SRRE recommends programs that will reduce the amount of waste requiring disposal over the next 15 years. Undiverted solid waste will be landfilled at the YCCL facility. The Disposal Facility Capacity Component calculated the capacity required by unincorporated Yolo County based on waste generation and diversion projections, plans to import and export solid waste

between jurisdictions, and available landfill or transformation capacity. The disposal facility capacity calculations indicated that the YCCL facility will provide disposal capacity through the 15 year planning horizon.

10.6 REGIONAL IMPLEMENTATION OF DIVERSION PROGRAMS

Certain programs recommended for the unincorporated county may be most efficiently and cost-effectively performed through a regional system. The regional system can allow communities to develop and operate capital-intensive programs or to perform common activities cooperatively. Recommendations were made in the SRRE for Yolo County to consider participating in regional program for the development of a materials recovery facility. Final determination of a regional or local approach will be based on a feasibility analysis planned for the short-term. For the purposes of this planning document and developing program costs the materials recovery facility program was examined assuming regional development and implementation.

Regional program may be developed through several potential administrative mechanisms, including: joint powers agreement, cooperative agreement, solid waste authority, or special district. The appropriate administrative mechanism for Yolo County will be defined during the feasibility study period.

10.7 HUMAN RESOURCE NEEDS FOR YOLO COUNTY

The development and implementation of the diversion programs for the unincorporated county will require technical and administrative staff time. Programs coordinated on a regional level will require local staff time to ensure that the regional program fulfills the needs of the unincorporated county, to carry out related local tasks, and to monitor development and implementation. The source reduction, recycling, composting, special waste, and public education components projected the amount of staffing time required. Combined, these

programs will require approximately 2.0 full-time staff equivalents. The responsible entities are identified in each component and in the integration implementation schedule.

10.8 IMPLEMENTATION SCHEDULE

The implementation schedule for the new and expanded programs is compiled from the implementation schedules developed for the source reduction, recycling, composting, special waste, and public education components. The integrated implementation schedule shows the required annual activities. Table 10-3 lists all implementation tasks for new and expanded programs, responsible entities for each task, and task start and milestone dates. Specific tasks and implementation schedules for U.C. Davis programs are provided in Appendix E. The anticipated funding source for all activities is the Sanitation Enterprise Fund. Funds from this source become available July 1st of each year in Table 10-3.

Table 10-3
Implementation Schedule -- 1991

Task Timing	Component/Program/Task	Responsible Entity
1991	**SOURCE REDUCTION**	Dept. of Public Works and Transportation (DPWT); Waste Reduction/Recycling Coordinator (WRRC)
	• Technical Assistance,Education & Promotion	
9/91 - 3/93	- Identify media materials used successfully in other jurisdictions	
9/91 - Ongoing	- Educate public about diaper dilemma	
9/91 - Ongoing	- Inform residents of options for diversion of used clothing and textiles	
	• Rate Structure Modifications	
9/91-12/92	- Evaluate adequacy of tipping fee; institute fee increase as necessary to fund programs	
9/91-12/92	- Identify selected waste for application of increased differential fees	
1991	**RECYCLING**	DPWT; WRRC all activities
	• Office Paper Recovery	
9/91 -12/91	- Deliver desk-side containers to additional county facilities (libraries, etc.)	
9/91 - 12/91	- Procure additional materials marketing availability	
9/91 - Ongoing	- Perform training sessions and ongoing employee motivational campaigns	
1991	**PUBLIC INFORMATION** (only includes activities not already covered under source reduction)	DPWT; WRRC all activities
	• Technical Assistance for Residential/Self-Haul	

Table 10-3
Implementation Schedule -- 1991

Task Timing	Component/Program/Task	Responsible Entity
Ongoing	- Provide technical assistance and information to the community	
	• Technical Assistance for Commercial/Industrial	
9/91 - 3/92	- Educate business about commercial site-of-generation composting	

Table 10-3 (continued)
Implementation Schedule -- 1992

Task Timing	Component/Program/Task	Responsible Entity
1992	**SOURCE REDUCTION**	DPWT; WRRC all activities
	• Technical Assistance, Education & Promotion	
1/92 - Ongoing	- Identify materials available from the state for use in schools. Develop projects for use in area schools based on findings	
	• Rate Structure Modifications	
1/92 - Ongoing	- Identify and apply differential fee; monitor subsequent changes in materials disposed	
	• Local Government Source Reduction Programs	
9/92 - 12/93	- Identify county departments suitable for waste evaluation review	
9/92 - 6/93	- Conduct thorough waste evaluations for all appropriate county departments	
9/92 - 6/93	- Develop employee education campaign to encourage in-house and at-home source reduction practices	
1992	**RECYCLING**	DPWT; WRRC all activities
	• Drop-off Centers (New)	
9/92 - 12/92	- Determine role of nonprofit organization(s) in new centers operations	
	• Materials Recovery Facility	
7/92 - 10/92	- Identify participating jurisdictions	
	• Self-haul Bin Transfer Operation	
7/92 - 6/93	- Obtain required permits for bin transfer operation	
	• Commercial Collections	

Table 10-3 (continued)
Implementation Schedule -- 1992

Task Timing	Component/Program/Task	Responsible Entity
6/92 - Ongoing	- Provide technical assistance to businesses, waste haulers, recyclers and processors to establish collection systems	
1992	**COMPOSTING**	DPWT; WRRC all activities
	• Yard Debris Composting	
1/92	- Apply for demonstration project allowing chipped green waste to be used as an alternative daily cover at the landfill	
1/92 - Ongoing	- Provide support to Valley By-Products for permitting and review process	
9/92	- Provide dedicated roll-off containers at the Esparto transfer station	
10/92	- Stratify landfill gate fees and provide incentives for diverting yard debris	
1992	**SPECIAL WASTE**	DPWT; WRRC all activities
	• Tires	
1/92 - Ongoing	- Identify the existing tire shredding operations and potential markets for the tire chips in the surrounding area	
4/92 - 6/92	- Work with existing shredding operators to develop potential markets for the tire chips that are consistent with AB 1843	
4/92	- Investigate opportunities for whole or shredded tires as feedstock for incineration	
1/92	- Determine handling and transportation methods and costs	
	• White Goods	
7/92	- Establish county level of involvement.	

Table 10-3 (continued)
Implementation Schedule -- 1992

Task Timing	Component/Program/Task	Responsible Entity
7/92	- Depending on the County's role in white goods program, one or more tasks will be required.	
10/92 - Ongoing	- Begin ongoing white goods program	
10/92 - Ongoing	- Monitor whomever is responsible for dismantling of the hazardous components to ensure proper disposal	
	• Wood Waste Recovery	
1/92	- Determine current amount and types of wood being discarded, including tree stumps and furniture	
1/92 - 3/92	- Identify potential reusers/recyclers	
3/92	- Participate in chipping/grinding program for landscape material, sludge, alternative daily cover and soil amendment products	
1992	**PUBLIC EDUCATION** (only includes activities not already covered under source reduction)	DPWT; WRRC all activities
	• Source Reduction Technical Assistance Residential/Self-Haul	
3/92 - 7/92	- Educate residents about backyard composting tips and techniques	
9/92 - 6/93	- Educate residents of the unincorporated county about the environmental issues regarding disposable diapers and the alternatives including available diaper services	
9/92 - 6/93; Ongoing	- Inform residents of the options available for reuse of used clothing and textiles at local facilities	
	• Recycling Residential/Self-Haul	
Ongoing	- Educate residents about locations, times and accepted materials at drop-off centers	
	• Composting Residential/Self-Haul	

Table 10-3 (continued)
Implementation Schedule -- 1992

Task Timing	Component/Program/Task	Responsible Entity
10/92 - Ongoing	- Promote usage and location of yard waste drop-off point at YCCL	
10/92 - Ongoing	- Promote availability, use, and quality of finished compost product	
	• Special Waste Residential/Self-Haul	
1/92 - Ongoing	- Promote alternatives for waste tire disposal, such as reuse and retread	
10/92 - Ongoing	- Educate residents about the benefits of recycling white goods	
11/92 - Ongoing	- Notify residents of management options including repair facilities, donation facilities, and drop-off options at YCCL	
1/92 - Ongoing	- Educate residents about benefits of reuse of scrap lumber	
1/92 - Ongoing	- Educate residents about the benefit of separating wood from self-haul loads	
	• Recycling Commercial/Industrial	
4/92 - Ongoing	- Educate businesses about setting up recycling programs	
1/92 - Ongoing	- Promote availability of technical assistance for developing programs;educate office workers on the WOW program	
	• Composting Commercial/Industrial	
10/92 - Ongoing	- Educate businesses and county departments, such as Parks and Recreation, about uses, availability, and quality of compost product	
10/92 - Ongoing	- Promote separation of institutions'/businesses' yard waste for composting at the central facility	
	• Special Waste Commercial/Industrial	
1/92 - Ongoing	- Educate commercial consumers about recycled material options;promote reuse options	

Table 10-3 (continued)
Implementation Schedule -- 1992

Task Timing	Component/Program/Task	Responsible Entity
4/92 - Ongoing	- Educate county departments about policy changes and options for use and recycling	
4/92 - Ongoing	- Educate Community Development Department about opportunities to encourage use of recycled materials in private construction projects	
1/92 - Ongoing	- Educate generators about the importance of proper waste tire management	
1/92 - Ongoing	- Educate potential in-house whole tire users about the availability and possible uses for whole tires in county projects	
1/92 - Ongoing	- Inform generators about the whole tire reuse program and potential tire reuse options	
1/92 - Ongoing	- Promote use of retread tires on vehicles	
1/92 - Ongoing	- Promote potential uses of crumb rubber products	
1/92 - Ongoing	- Educate commercial consumers about recycled material options and reuse options for asphalt/concrete waste	
1/92 - Ongoing	- Educate businesses on benefits of source separation of wood debris	
10/92 - Ongoing	- Educate generators of white goods about the importance of white goods recycling/hazard minimization	
10/92 - Ongoing	- Promote alternative management options including repair and resale facilities	

Table 10-3 (continued)
Implementation Schedule -- 1993

Task Timing	Component/Program/Task	Responsible Entity
1993	**SOURCE REDUCTION**	Dept. of Public Works and Transportation DPWT); Waste Reduction/Recycling Coordinator (WRRC)
	• Technical Assistance, Education & Promotion	
1/93	- Create waste audit checklist forms based on local conditions	
1/93	- Determine availability of technical assistance funding from the state	
1/93 - 12/93	- Contact cities within Yolo County to negotiate shared grant funding for regional waste exchange	
3/93 - Ongoing	- Design and conduct workshops, seminars, and public demonstrations focusing on source reduction	
3/93 - Ongoing	- Assist in identifying state and federal grants, loans, and subsidies	
3/93 - Ongoing	- Produce and place local print and electronic media program based on findings	
3/93 - 12/93	- Identify and coordinate with key area businesses to develop employer outreach program for employee source reduction education	
6/93 - Ongoing	- Distribute checklists, offer waste evaluation assistance to commercial and industrial businesses	
6/93	- Develop and distribute promotional and technical assistance programs for residential site-of-generation composting	
6/93 - 8/93	- Identify key agricultural, food processing and other area business/industry for potential site-of generation composting implementation	

Table 10-3 (continued)
Implementation Schedule -- 1993

Task Timing	Component/Program/Task	Responsible Entity
6/93 - 8/93	- Recruit selected businesses for pilot composting program; provide technical information to other area businesses	
	• Local Government Source Reduction Programs	
1/93 - 6/93	- Conduct through waste evaluations for all appropriate county departments	
1/93 - 6/93	- Review all internal and external forms used by county departments for reduction, or double-sided production; provide recommendations to appropriate departments	
1/93 - 6/93	- Identify opportunities for increased use of electronic mail for departments that are now computerized; provide recommendations to appropriate departments	
1/93 - 6/93	- Identify additional double-sided copying capacity needs; prepare plan for phase-in of additional machines; procure as appropriate	
1/93 - Ongoing	- Identify suitable county public works projects for use of plants that produce relatively little waste; identify sources and implement increased usage	
1993	**RECYCLING**	DPWT; WRRC all activities
	• Drop-off Centers (New)	
9/93 - 12/93	- Accomplish site improvements, procure equipment, and establish market arrangements	
	• Office Paper Recovery	
1/93 - 6/93	- Develop a technical assistance program for private sector offices in Yolo County	

Table 10-3 (continued)
Implementation Schedule -- 1993

Task Timing	Component/Program/Task	Responsible Entity
1/93 - 6/93	- Coordinate a technical assistance program with waste haulers, recycling firms, office paper dealers, and processors to service the program	
	• Self-haul Bin Transfer Operation	
1/93 - 3/93	- Identify site needs and parameters of an expanded "urban ore" operation at the existing YCCL drop-off center	
4/93 - 9/93	- Accomplish site improvements and establish market arrangements for expanded urban ore operation	
9/93	- Launch publicity/promotional campaign	
9/93; Ongoing	- Implement expanded urban ore	
Fiscal Year 93-94	- Prepare engineering design and specifications	
	• Materials Recovery Facility	
1/93 - 12/93	- Through CoIWMP process, integrate city and county SRRE's and conduct a feasibility study to determine the facility/system parameters, economics, and targeted waste streams for a site at the Yolo County Central Landfill	
1/93 - 7/93	- Develop policy issues including county's role in ownership/operation and flow control	
1/93 - 7/93	- Define a vendor procurement process for facility construction and operation as appropriate; select vendor	
	• Commercial Collections	
1/93 - 6/93	- Conduct a survey of commercial waste generators in Yolo County to identify opportunities for, and barriers to, commercial collection/recycling systems	

Table 10-3 (continued)
Implementation Schedule -- 1993

Task Timing	Component/Program/Task	Responsible Entity
1993	**COMPOSTING**	DPWT; WRRC all activities
	• Yard Debris Composting	
1/93 - 3/93	- Determine facility needs to accommodate expansion of Valley By-Products operation	
9/93 - Ongoing	- Expand and improve the yard debris composting program on a continuing basis	
1993	**SPECIAL WASTE**	DPWT; WRRC all activities
	• Construction and Demolition Debris	
1/93 - 6/93	- Research used asphalt and concrete markets to determine material buyers	
1/93 - 6/93	- Revise construction specifications requiring asphalt and concrete contractors to use specific percentages of used asphalt/concrete	
7/93 - Ongoing	- Educate asphalt and used concrete generators to identify opportunities and recycling services available	
7/93 - Ongoing	- Begin ongoing use of the revised construction specifications	
	• Tires	
1/93 - 6/93	- Develop Tire Reuse Pilot Program to research possible tire reuse projects for the community	
7/93 - Ongoing	- Educate government agencies, residents, businesses and schools on possible reuse alternatives and the services of the Pilot Program	
7/93 - Ongoing	- Begin ongoing Tire Reuse Pilot Program	
7/93 - Ongoing	- Coordinate the individual tire reuse projects. Determine tire costs and delivery arrangements	

Table 10-3 (continued)
Implementation Schedule -- 1993

Task Timing	Component/Program/Task	Responsible Entity
1/93 - 6/93	- Revise tire purchasing specifications to include retreads	
1/93 - 6/93	- Develop bid specification to obtain a vendor	
6/93	- Issue request for bid to select retread supplier and processor	
7/93 - Ongoing	- Begin ongoing retread purchasing and procurement program	
7/93 - Ongoing	- Educate residents and small businesses regarding the environmental advantage of retread tires	
7/93 - Ongoing	- Educate generators that retreading is a viable alternative to landfilling	
1/93 - Ongoing	- Monitor crumb rubber facility development in Northern California	
1/93 - Ongoing	- Monitor Cal Trans bid specifications concerning rubberized asphalt	
1/93 - 6/93	- Incorporate Cal Trans specifications as appropriate	
7/93 - Ongoing	- Promote and monitor the use of rubberized asphalt surface on county streets and highways	
	• Wood Waste Recovery	
3/93 - 9/93	- Develop public education campaign to promote repair and reuse of furniture and sale of chipped product	
1993	**PUBLIC INFORMATION** (only includes activities not already covered under source reduction)	DPWT; WRRC all activities
	• Source Reduction Commercial/Industrial	
3/93 - Ongoing	- Develop an employee education campaign to encourage at-work and at-home source reduction practices	

Table 10-3 (continued)
Implementation Schedule -- 1993

Task Timing	Component/Program/Task	Responsible Entity
4/93 - Ongoing	- Inform educators and promote the availability of source reduction and recycling curricula from state and public interest groups	

Table 10-3 (continued)
Implementation Schedule -- 1994

Task Timing	Component/Program/Task	Responsible Entity
1994	**RECYCLING**	DPWT; WRRC all activities
	• Drop-off Centers (New)	
1/94	- Launch a publicity/promotional campaign	
1/94 - Ongoing	- Implement operations	
	• Materials Recovery Facility	
1/94 - 1/96	- Obtain local state reviews and permits as required	
	• Self-haul Bin Transfer Operation	
7/94 - 10/94	- Construct facility	
9/94	- Retain contractor for operations	
10/94	- Commence ongoing operation	
1994	**COMPOSTING**	DPWT; WRRC
	• Yard Debris Composting	
1/94 - Ongoing	- Monitor the program on a continuing basis	
1994	**SPECIAL WASTE**	DPWT; WRRC all activities
	• Concrete and Demolition Debris	
1/94 - Ongoing	- Evaluate and monitor program	
	• Tires	
1/94 - Ongoing	- Evaluate and monitor Tire Reuse Pilot Program	
1/94 - Ongoing	- Evaluate and monitor retread purchasing and procurement program	
1/94 - Ongoing	- Promote the use of crumb rubber in the private sector	
1/94 - Ongoing	- Evaluate and monitor rubberized asphalt applications	

Table 10-3 (continued)
Implementation Schedule -- 1994

Task Timing	Component/Program/Task	Responsible Entity
1994	**PUBLIC EDUCATION** (only includes activities not already covered under source reduction)	DPWT; WRRC
	• Recycling Residential/Self-Haul	
10/94	- Promote source separation of self-haul wastes and use of the bin-transfer operation at YCCL	

Table 10-3 (continued)
Implementation Schedule -- 1995 - 2000

Task Timing	Component/Program/Task	Responsible Entity
1995 - 2000	**RECYCLING**	DPWT; WRRC all activities
	• Materials Recovery Facility	
1/95 - 1/96	- Prepare plans and specifications for construction and operation of facility	
1/96 - 6/97	- Construct facility, conduct start-up and performance testing	
6/97 - Ongoing	- Begin operations of material recovery facility	
1995 - 2000	**COMPOSTING**	DPWT; WRRC all activities
	• Yard Debris Composting	
1/95	- Develop pilot scale tests of new feedstock materials (i.e., sewage sludge, manure, food scraps)	
	• Anaerobic Digestion	
As scheduled by grant	- Based on the results of the pilot study conducted in the short-term, develop and modify process for scaled up operation	
	• MSW Composting	
7/95	- Review MSW composting as a means to expand composting of the remaining organic fraction	
1995 - 2000	**PUBLIC EDUCATION** (only includes activities not already covered under source reduction)	DPWT; WRRC all activities
	• Materials Recovery Facility Commercial/Industrial	
6/97	- Educate haulers about program and facility design capabilities	
1/98	- Provide periodic recycling program updates	

APPENDIX A

YCCL RATE SCHEDULE

	January 1, 1991 Actual	July 1, 1991 Actual	January 1, 1992 Actual	October 1 1992 Proposed
COMMERCIAL LOADS	$15.75	$17.75	$20.00	$30.00 ton
COMMERCIAL LOADS OF WASTE GENERATED IN AREAS OUTSIDE YOLO COUNTY	19.25	21.25	25.00	35.00 ton
NONCOMMERCIAL SMALL TRAILERS OR PICKUPS WITH RACKS OR LOADS GREATER THAN 3 FEET IN HEIGHT ABOVE THE BED AND LOADS 8 FEET LONG OR MORE	6.00	6.00	7.00 EACH	30.00 ton
COMMERCIAL LOADS AND NON-COMMERCIAL LOADS OF CLEAN GREEN WASTE.	-	-	-	25.00 ton
NONCOMMERCIAL AUTOS	2.00	2.00	3.00	3.00 each
NONCOMMERCIAL PICKUPS AND SMALL TRAILERS WITH LOADS 8 FEET LONG OR LESS	4.00	4.00	5.00	5.00 each
BULKY WASTES-STYROFOAM, PALLETS, HOUSE-HOLD FURNISHINGS, TREE STUMPS, ETC.	61.75	63.75	63.75	95.00 ton
BULKY WASTES-HOUSEHOLD FURNISHINGS SUCH AS SOFAS, MATTRESSES, ETC.	-0-	-0-	5.00	5.00 each
AUTO TIRES	2.00	2.00	2.00	2.00 each
TRUCK TIRES (Rim Size 16" through 22")	3.00	3.00	3.00	3.00 each
TRACTOR TIRES (Rim size 24" and larger)	4.00	4.00	4.00	4.00 each
BULK TIRES (Whole)	76.00	76.00	80.00	80.00 ton
HOUSEHOLD APPLIANCES - REFRIGERATORS, STOVES, WASHERS, DRYERS, ETC.	3.00	3.00	5.00	5.00 each
CLEAN SOIL, UNMIXED CONCRETE OR ASPHALT 2 FEET OR LESS IN GREATEST DIMENSION	-0-	-0-	5.00	-0-
MIXTURES OF GRAVEL, SOIL, ASPHALT, CONCRETE, WITH OTHER CONSTRUCTION WASTES, OR LARGE CHUNKS OF CONCRETE OR ASPHALT	8.00	8.00	10.00	10.00 ton
SEPTIC, CANNERY AND SIMILAR LIQUID WASTES	32.00	34.00	36.75	47.50 ton
TRUCK WASH-OUT	50.00	50.00	50.00	50.00 each
MINIMUM CASH FEE FOR WEIGHED MATERIALS	7.00	7.00	7.00	7.00
DROP-OFF CENTER RECYCLABLES	-0-	-0-	-0-	-0-
ENGINEERING/HYDROGEOLOGIST WASTE ANALYSIS			50.00 hour	50.00 hour
LABORATORY EXPENSES			actual	actual

Esparto Fee Schedule to remain unchanged.

September 9, 1992

APPENDIX B

RECOVERED MATERIALS MARKET ANALYSIS

APPENDIX B

RECOVERED MATERIALS MARKET ANALYSIS FOR YOLO COUNTY AREA

Recycling, composting, and materials and energy recovery activities all recover or generate reusable products. A major consideration in evaluating alternatives is the availability of markets and the revenue that returns to the program or facility operator from sale of products. The following analysis describes the materials most suited for recovery, and identifies markets for recyclable materials, compost products, and energy products potentially available to Yolo County. This discussion is based in part on a telephone survey of markets in the Sacramento Valley to understand local market conditions.

In assessing markets for various recyclable materials being recovered in Yolo and the region, focus is directed to the more common items that are recovered by multi-material recovery programs. The items of particular significance are newspaper, corrugated cartons, office paper, mixed paper, glass containers, plastics, aluminum, tin cans, scrap metals, tires, compost, and energy products.

B.1 MARKETING ROLES AND PROCEDURES

A variety of processing and manufacturing firms are available to purchase secondary materials from recovery programs in Yolo County. There are basically three types of potential buyers: processors or dealers; brokers; and the end-user manufacturer. The two former buyer types most typify Yolo area local markets. A dealer purchases recyclable materials, processes them to consumer standards, and transports them to market. These firms include wastepaper packers, paper stock dealers, scrap metal dealers, and intermediate processor, which may handle a wide variety of recyclables.

Some waste generators, such as grocery stores and businesses, and many scrap dealers themselves, may sell their materials to an intermediate firm (a broker), which will in turn sell them to an end consumer without processing the materials. Brokers provide advantages to

consumers because they can assure a reliable supply of materials, usually at steadier prices. They also provide a service to smaller collectors who are unable to accumulate large shipments often required by manufacturers.

Both dealers and brokers require end-user markets. These firms buy the secondary scrap materials for use as feedstock to replace their use of raw materials. End-user buying practices vary by company and current market conditions. Some firms may buy direct from collectors or waste generators, or do so whenever market demand exceeds local supplies. Other firms set up subsidiary buyer or dealer companies whose main purpose is to assure adequate supplies for the parent firm. Still other firms buy supplies only from dealers or brokers who can readily assure standard specifications and regular deliveries.

On the West Coast, large quantities of waste paper and scrap metals are exported to markets mostly located in the Pacific Rim countries. Export markets play a key role in the local marketplace with their capacity to increase volatility in often fluctuating markets.

For Yolo County, or any jurisdiction, arranging long-term contracts with dealers or brokers will be preferable to selling on the spot market. Contracts can guarantee certain floor prices for materials, and can also help to establish customer loyalty in otherwise glutted market conditions.

B.2 ANALYSIS BY MATERIAL

Markets for most recyclables are strong in Northern California, but with a growing number of recovery programs coming on-line, (particularly with the advent of AB 939) the potential for market gluts of some materials, especially for newspaper, is very real. The description for these markets is divided into the following categories:

- Waste paper grades
- Glass containers
- Aluminum cans
- Tin (steel) cans
- Scrap metals
- Plastics
- Tires
- Compost products
- Energy products

B.2.1 Waste Paper Grades

Waste paper is generally divided into two categories: low-grade papers containing shorter and weaker fiber, and high-grades of paper containing strong fiber which is more useful for recycling in a greater number of products. In recycling, the pulping, cleaning, de-inking, and other paper-making processes tend to weather and break the paper fibers. As a result, high-grades of wastepaper, such as office ledger and computer print-out (CPO), bring much higher prices, usually five- to tenfold more, than the lower grades such as corrugated cartons (OCC) or old newspaper (ONP). Mixing grades lowers their value even further.

Marketing conditions vary independently of each grade. Generally higher grades undergo relatively less drastic fluctuation in price than lower grades. For any waste paper market, it will be important for the county to ascertain what level of processing the buyer requires (e.g., baled, loose bundles, or other). By providing buyers with materials in the condition they desire, the county will ensure a stronger position, and potentially better prices, in an increasingly glutted marketplace.

There are several waste paper dealers in the Sacramento Valley that could be accessible to recovery programs in Yolo County. There is also one consuming mill (end user) for waste paper that was identified. Local paper markets are discussed individually in Section B.5.

Newspaper (ONP). Newspaper is the most familiar recyclable item found in the household. Because ONP is more readily available in larger quantity, with more than 10 million tons consumed annually in the United States, it is usually the largest volume item recycled through residential oriented programs. ONP can currently find a ready market with several local dealers

in the Sacramento Valley, and it can also be sold directly to local mills such as Keyes Fiber Company, other domestic mills and potentially to overseas markets.

Old newspapers are used by many types of manufacturers. For example, cellulose insulation, roofing felt, construction paper, boxboard and paperboard typically contain old newspapers. In the Sacramento Valley, Keyes Fiber Company uses ONP to produce a molded pipe fiber for egg and fruit packaging.

Current prices in the Sacramento Valley are approximately $10 to $15 per ton, and will likely continue to fluctuate on the low end for the near term.

A growing number of end-users of waste newspaper are newsprint manufacturers. One example is the Smurfit Paper Company in Oregon which buys wastepaper (through Independent Paper Stock Company) in the Sacramento Valley.

The market for old newspaper, as with other secondary fibers, tends to be cyclic, although export demand in the Bay Area can affect these cycles. For example, many paper and paperboard producers shut down for short periods in the summer to allow for vacations and equipment repairs. Secondary fiber demand may fall during this period. Demand for old newspapers by cellulose insulation manufacturers is also cyclical with heavy demand in the fall and winter, and much lower need of waste paper in the spring and summer.

Old Corrugated Containers (OCC). With corrugated containers being used as shipping packaging for almost every consumer product used, a greater amount of OCC is produced than newspaper (about 15 million tons are consumed every year in this country).

Recovery levels of OCC are more price sensitive than for newsprint, largely due to the difference in the waste source and the type of collection practice. OCC makes up a larger portion of commercial rather than residential wastes, whereas smaller scale collection practices depend heavily on individuals, most of whom collect only when the price reaches certain levels. ONP, a larger portion of residential wastes, is more commonly collected in most parts of the

Sacramento Valley area by municipal and private programs that collect newspaper regardless of market price fluctuations.

OCC is rarely collected in curbside recycling programs due to its bulky nature and low recovery levels. Because of these problems, a growing number of municipal recycling programs have instituted, or are studying commercial collection that targets chiefly OCC and sometimes glass and metal containers.

A primary consumer of old corrugated containers recovered in Northern California are linerboard, corrugating medium, and boxboard mills. In addition, roofing felt and gypsum board liner producers use old corrugated cardboard as a feedstock. In the Sacramento Valley, Gold Bond Building Products is an end user of locally generated OCC.

Demand for old corrugated containers, unlike for newspaper, is likely to remain stable in the near term. Fiberboard Corporation (Louisiana-Pacific) and Gaylord Containers, Ltd. (Crown-Zellerbach) companies have increased purchases at their Antioch, California, mills in recent years, and Inland Container Company built a new recycled fiber mill a few years ago in Southern California. Because of its large capacity (over 600 tons per day), this mill may have significant impact on markets throughout California. The export of old cartons is also a major market segment. Current Sacramento Valley prices, about $20 per ton, are weaker than they have been in the past, but will likely remain relatively stable in the short term.

High-Grade Waste Paper. Bond and ledger waste office papers are among those grades of paper manufactured from long fibers. As secondary fibers, such paper grades, even though they contain ink, command a higher price than the bulk grades, such as newspaper, corrugated containers, and mixed wastepaper. Current prices for high grade papers in the Sacramento Valley vary from $55 to $160 per ton, depending on exact grade and color, and are generally more stable than lower priced bulk grades.

Office paper and other printed grades are commonly used as a de-ink raw material in the manufacture of similar grades of paper. Tissue, toweling, and sanitary paper manufacturers are also large consumers.

Demand for high-grade waste paper is growing along the West Coast as tissue and writing paper producers add new machines that can better use secondary fiber and increase overall capacity.

About 4 million tons of printing and writing paper are discarded from offices every year in the United States. The three major types of office paper recycled are white ledger, colored ledger, and computer printout (W/L, C/L & CPO). Some local dealers (including Independent Paper Stock and Weyerhaeuser) will provide convenient containers, transportation, and other incentives to businesses and government agencies that generate large quantities of these grades of paper. Although this source of paper is worth much more per ton than other paper, it is not practical for curbside and most other multimaterial recycling centers to pursue because of the small amount available through general public collections.

B.2.2 Glass Containers

Although a few firms, such as wastepaper dealers, buy-back centers and intermediate processors purchase waste glass in California for resale to end-users, the majority of scrap glass containers (cullet) is sold directly to glass container producers by collectors for approximately $100 per ton, depending on collection and processing procedures.

There are a number of glass container producers in Northern California buying cullet, including Owens-Illinois in Tracy. Since these types of firms already re-process a sizeable volume of rejected containers, cullet handling systems are already in place at most plants.

The cullet market has been noted in the past for its relative stability with practically no change in demand or price. However, in recent years container manufacturers, led by Owens-Illinois, have been paying premium prices for cullet recovered in buy-back recycling programs. Cullet volume tends to increase in the summer and immediately after the year-end holidays, but market

demand is far larger than supply fluctuations caused by seasonal variations, or growth of municipal recycling programs. With much higher recovery rates of glass containers being targeted by AB 2020, the glass industry is now in the process of greatly increasing its capacity to consume recycled containers. Market for collected glass, particularly color sorted, are expected to remain strong in the Sacramento Valley area and Northern California in general. A major concern of the end-user markets is to have program operators pay closer attention to the materials specifications, and to have cullet delivered that does not contain excessive contaminants.

B.2.3 Aluminum Cans (UBC)

In addition to the numerous grades of ferrous and non-ferrous metallic wastes collected from businesses and industry, a growing number of scrap metal processors also handle residential wastes, generally scrap beverage and food cans.

In the last 20 years, a substantial recovery system for used aluminum cans has evolved. Due to the relatively high value of scrap aluminum and the metal's dominance as a beverage container, thousands of independent collectors in California pick up scrap cans and sell them to intermediate processors or directly to the end-users' outlet stations.

Few of the aluminum cans recovered in California are consumed here, since the majority of the metal is sent to secondary smelting operations in Colorado, Indiana, and Alabama. The majority of scrap cans recovered in the United States are consumed by primary aluminum producers -- such as Reynolds Metals, Kaiser Aluminum and Chemical, Alcoa and Alcan -- although nonintegrated secondary aluminum smelter operators have captured a larger market-share in recent years. Foreign end-users are becoming more interested too, particularly primary aluminum producers in Japan, although they have not yet become a major factor.

The price of scrap aluminum cans tends to follow that of primary aluminum. During the warm summer months, the recovery volume dramatically grows only to fall off in the cooler months,

when fewer containers are used by soft drink and beer consumers. Current market prices in the Sacramento Valley range from $1,900 to $2,000 per ton.

Used beverage containers (UBC) made of aluminum enjoy strong markets throughout the Sacramento Valley, and are recognized by the general public as an easily recycled household item. The Department of Conservation estimates that Californians currently recycle in excess of 70 percent of all the cans sold in the state. Due to the purity of aluminum cans as a source of aluminum scrap, and the significant energy savings associated with recycling UBC, the all-aluminum can has become one of the highest recovered materials in municipal wastes.

B.2.4 Plastics

The recovery of plastics from the waste stream is a relatively new phenomenon, however, on growing in popularity particularly as plastics become an increasingly large portion of the waste stream.

Both locally and nationwide, plastics recovery is primarily limited to high density polyethylene (HDPE; e.g., milk jugs) and polyethylene terephthalate (PET; e.g., plastic soda bottles). Styrofoam is currently receiving attention and research efforts, however, few programs or markets now exist in the U.S. to collect and recycle this material.

The major limitation to the recycling of plastics is its generally high volume-to-weight ratio; that is, collected plastics for recycling consume a large volume in storage transport, but weigh relatively little. Because recyclers pay by weight, this makes plastics recovery an often marginal or unprofitable activity. New technologies to better densify and handle recovered plastics are beginning to address this problem.

Locally, few markets exist to purchase recovered plastics. Most area markets report that it is not currently a profitable activity given the low volumes and tonnage of recovered plastic materials. Yolo county may be able to stimulate local markets through supply of large quantities

of material and/or densification of plastics prior to marketing. The lack of major end users, however, remains a serious obstacle to the large scale recovery of plastics locally.

B.2.5 Tin (Steel) Cans

Tin cans (tin-plated steel cans used mostly as food containers) recovered in the Sacramento Valley are generally used by two types of manufacturers; steel makers or de-tinner processors. A very small amount is consumed by steel makers, since tin cans must compete with readily available grades of ferrous scrap, such as shredded auto bodies. In addition, the inclusion of the tin cans (that have not been de-tinned) in the furnace feed is metallurgically limited, since high levels of tin can contaminate many steel making processes.

The major buyer in California is Proler International, operator of five de-tinning plants in the United States. The firm's plant in Lathrop (near Stockton) uses a caustic solution to strip the valuable tin coating from recovered cans. The tin in solution is then electrolytically removed and formed into ingots. Food and paper or plastic labels interfere with the de-tinning process and often need to be removed for the Proler market. Proler's Lathrop facility purchases tin cans at $50 per ton, delivered.

Curbside collection is the main avenue for post-consumer tin can recovery, in which the desire to divert material from the waste stream helps to justify recovery of this material. Depending on area of the country, the markets for tin cans may include steel mills, iron foundries, de-tinning plants or copper processing plants.

B.2.6 Scrap Metals

The recovery of scrap metals is an integral part of the metals manufacturing process and is one of the oldest forms of recycling. Today, most scrap metals never enter the waste stream as industries have developed with the sole function to recover metals for supply to mills and manufacturers. Old white goods, automobiles, rail cars and ships are routinely sent to dismantling and processing yards for the recovery of their metals. A local example is C&C

Metals of Sacramento which processes and melts down a variety of scrap metals for sale and reuse in manufacturing.

Metals that do enter the waste stream typically come from residential and small commercial sources as the larger commercial and industrial waste metal generators will often already be served by a recovery operation. Scrap metals can be divided into two groups, ferrous (e.g., iron and steel products) and non-ferrous (e.g., aluminum, copper, brass, precious metals). Ferrous metals in the waste stream typically include miscellaneous auto parts, re-bar from demolition and construction activities, and appliances. The non-ferrous waste stream may include aluminum siding, screen doors and patio furniture, copper pipe, and other fixtures. The YCCL facility currently contracts with a local buyer for the recovery of scrap aluminum.

The local markets for scrap metals is relatively mature with several long time buyers serving the Sacramento Valley area. These include Reynolds aluminum, C&C Metals and Atlas Metals. these buyers are described in more detail in Section B.5. These markets are all easily accessible to any Yolo scrap recovery efforts. The prices for scrap are relatively stable compared to most other recyclables because of the industry's maturity and well established infrastructure.

B.2.7 Tires

Tires, as a recoverable resource, is relatively new to the recycling arena. the recovery of waste tires is, however, becoming more popular because of the management problems they pose at the landfill, e.g., the tire "float" phenomenon, fire hazard, and attracting vectors.

Tire recovery can be accomplished through whole tire options and processed (chipped, shredded, crumbed) tire options. The former includes reuse as retreaded tires and reuse in municipal or private projects such as crash barriers, erosion control, breakwaters, playgrounds, etc. Processed tires can be used as a supplemental fuel in boilers, or, if crumbed, incorporated into paving materials as rubberized asphalt.

In Yolo County, tires are hauled from YCCL by Tire Disposal Service of Sacramento. Tires are sent to a cement kiln energy facility in Redding for $75 per ton. Few other options exist at this time, however.

If tires are to be recovered in Yolo County for non-incineration or disposal purposes, then whole tire reuse will likely be the strongest near-term market. Cities and County government can create an internal market through programs such as retread tire procurement for local agencies, and innovate uses of tires in municipal projects. The use of crumb rubber in asphalting holds great promise as a market, however, this will likely be a long term option only as no such facilities currently exist in the area to generate such a product.

B.3 MARKETS FOR COMPOST PRODUCTS

B.3.1 Yard Waste Compost

The composting process turns yard wastes into a humus-like substance that looks and smells like rich dark soil. This product is not a fertilizer, as it is relatively low in nitrogen, but rather a soil amendment used to improve the texture, aeration, cation-exchange capacity, and temperature stability of soil. Yard-waste compost may be used for gardening; formulation of potting mixes and topsoil by nurseries, sod growers and landscapers; and topdressing, turf repair, and revegetation in parks, open spaces, and roadsides. The ability of compost to greatly increase the water-retaining capacity of soil while maintaining good drainage is particularly important in the seasonally dry climate of the Central Valley.

At present, there are no identified commercial buyers for yard-waste compost in Yolo County or the surrounding area. High quality compost from "traditional" Northern California sources is in ready supply from numerous Sacramento Valley landscapers and wholesale distributors at approximately $5 to $9 per cubic yard. A survey of area dealers in compost products indicated that buyers have an interest in purchasing compost generated from municipal yard waste programs, however, none are doing so currently. (Redi/Gro of Sacramento is currently

purchasing composted sewage sludge from EBMUD at approximately $12 per cubic yard, delivered.) All potential buyers expressed the importance of generating a high quality, homogeneous, and sterile product if the compost is to be commercially marketable. Ability to deliver in bulk or bagged can also improve marketability.

The Yolo County Department of Public Works and Transportation recently identified an alternative use for compost material locally. The Department has plans to mix compost material with ash, sand and soil to create an alternative daily cover material at YCCL. This activity, if implemented, could provide a long-term "market" for significant quantities of locally generated compost material.

Successful sale of yard-waste compost in the Yolo County area will require manufacture of a high-quality product, market development, and consumer education about the benefits of using this material. High sales prices are unlikely because the mandates established under AB 939 will result in greatly increased availability of yard-waste compost throughout California, reducing potential prices. Many communities already charge to fee to people picking up finished material from the compost site; those that do receive prices ranging from $1 to $20 per cubic yard, depending on product quality and other factors.

Development of compost sales markets may not be required for part or even all of the finished compost. Use of compost for municipal projects, such as parks and landscaping, will result in avoided costs of purchasing other soil amendments. Arthur Jokola, a professor at California State Polytechnic University at Pomona, examined the benefits of compost use on various types of public lands. His study concluded that the capital value increase from land improvements due to compost use could equal or exceed revenues obtainable by selling the material. For example, compost used to aid reforestation of watershed lands would greatly reduce erosion and silting-up of reservoirs; and improved moisture retention by compost-treated soils would greatly reduce water consumption. He also concluded that for many cities in California, opportunities for use of compost on public lands could use all the compostable material available. Given these results, the Yolo County Department of Public Works may provide the best outlet for Yolo generated yard waste compost, at least in the short term.

Caltrans will likely become a significant outlet for municipally generated compost, especially with the passage of AB 1322 which requires Caltrans to provide a purchase preference for compost derived from municipal project sources. In the Sacramento area, Caltrans has begun to substitute compost for other products in area roadside applications. Caltrans reports a potential usage of compost in the Sacramento area of approximately 2,000 cubic yards per year.

B.3.2 MSW Compost and MSW/Sewage Sludge Co-compost

Potential end uses and markets for compost made from MSW or from mixed refuse and sewage sludge are generally similar to those for yard-waste compost. Potentially excluded uses would include food crops. There is serious questions, however, about the market acceptability of any refuse-derived compost.

First, while generally resembling yard-waste compost, MSW compost also contains physical contaminants, such as plastic and glass, which many consumers will find aesthetically unacceptable. In addition, MSW compost contains significantly higher levels of heavy metals and toxic organics than does yard waste compost. (See Table B-1.) Preprocessing can reduce chemical contamination levels in the final product; however, the tiny amount of mercury in a hearing-aid battery, for example, is sufficient contaminate several hundred pounds of compost. The doubtful marketability of MSW compost will become more acute in the wake of the abundance of more easily accepted yard-waste compost that will likely occur in California as a result of AB 939.

Table B-1

Heavy Metal Contamination of Compost Made From Household Refuse as a Function of Refuse Preprocessing Versus Source Separation[a]

Metal	Concentration (mg/kg dry weight) No Processing	Processing in Materials Recovery Facility	Source Separation
Zn	1,700	520-800	230
Pb	800	420-700	160
Cu	600	100-270	50
Cr	180	40-70	30
Ni	110	25-35	10
Cd	7	1.8-2.5	1.0

B.4 MARKETS FOR ENERGY PRODUCTS

The following discussion presents an assessment of materials that can be used for the recovery of energy, either through combustion or non-combustion means. The products specifically addressed are wood waste, refuse derived fuel, alcohols, tars, and char products, and methane.

B.4.1 Wood Waste

Wood waste, when chipped, can be used as a high quality fuel for energy production. Wood chips may be burned in a dedicated boiler or used as a supplemental fuel in the production of steam and electricity. The typical BTU value for this material is 8,600 BTU per pound (bone dry), compared to coal at approximately 11,000 BTU per pound.

The market for this fuel is well established in Yolo County. The County's existing wood waste program, operated through Valley Bi-Products, currently recovers approximately 180 tons per year of wood waste for chipping to generate fuel. (This figure is extrapolated from data available for January to June, 1990.) Chips are used at the Woodland Biomass Plant for combustion (along with agricultural and other "green" wastes) to generate electricity. Also, suitable wood pieces are sold as fire wood to area residents. This facility provides a potential long term, stable market for wood chips generated at the landfill.

B.4.2 Refuse Derived Fuel (RDF)

When solid waste is divided into combustible and noncombustible constituents, RDF is the resulting product. The combustion fraction is taken and processed in some manner (fluffed, pelletized, or other) and then combusted either in a dedicated boiler or mixed with some other fuel, typically coal. (Because sale of RDF to a local user would imply its use as a co-combustion material, only this means of RDF incineration is discussed here.) RDF has two potential markets; utilities and industry. Both these markets express concern regarding the use of RDF in existing boilers. This is because of the technical difficulties associated with the co-combustion of RDF with other fuels. RDF has a lower BTU value than coal, natural gas, or oil, so burning RDF in some proportion may lower overall boiler efficiency. Co-combustion of RDF also leads to increased incidence of "slagging," i.e., the build up of residual materials inside the boiler, thus increasing boiler maintenance costs. Other concerns involve the storage of MSW and RDF on-site. If RDF is to be produced on the boiler site, means for the intake, storage, and handling of solid waste will have to be developed within the industry or utility. Many facilities are very reluctant to become "waste management" facilities, in addition to their normal operation. Whether produced on- or off-site, the storage of RDF would require a weatherproof storage area and a conveyance system from storage area to the boiler (with all those associated costs). Because RDF is readily combustible, the risk of fire at the facility is also increased. For these reasons, both technical and operational, co-combustion of RDF with other fuels is proving to be less viable activity nationwide.

If RDF were to be burned in a dedicated boiler developed solely for that purpose (as is now the national trend), this would correct many of the above problems, and provide for an automatic market. This operation would then become a strictly waste-to-energy activity for the purpose of electrical and/or steam sales, and have those limitations described previously.

B.4.3 Alcohols, Tars and Char Products

Alcohols, and particularly methanol, are end products of the acid hydrolysis process. Tars, gases (including methane) and carbonaceous char are end products of the pyrolysis process. Although some of these products (e.g., methanol and methane) are commonly used in the production of energy and maintain strong markets, the products generated through these technologies are not cost competitive with fuels derived from more conventional sources.

For tars and char products, research has indicated potential use of these products in the chemical industry, however, the high cost of generating these materials through these alternative processes, combined with quality assurance difficulties, has constrained this market option.

It is unlikely that these materials could be cost competitively marketed and/or consumed in the Yolo County area at this time.

B.4.4 Methane

Methane gas can be generated from solid waste though the decomposition of the organic fraction by anaerobic bacteria. Methane has numerous uses in industry and is a common fuel used in home cooking and heating. The market for methane is well established in Yolo County. The County's existing landfill methane gas recovery gas program collects approximately 1,000 cfm of methane, generating enough electricity to power 1,000 area homes. Additional methane generation in the county could readily access this market/end use assuming quality standards can be met.

B.5 SELECTED AREA MARKETS FOR RECOVERED MATERIALS

The following discussion presents an overview of the brokers, dealers, and end-users available in the Sacramento Valley for the purchase of materials from Yolo County recovery programs. This list is not an exhaustive one, rather, it is presented as a representative sample of local materials buyers, prices, and terms. Mention of specific firms does not constitute an endorsement of their services.

Independent Paper Stock Co. (IPS)
Ray Christianson, General Manager
4800 Florin-Perkins Road
Sacramento, CA
916-381-3340

This facility is currently one of the largest recovered materials buyers in the Sacramento Valley. They are owned and operated by the Jefferson Smurfit Co., an Oregon based paper mill. The Sacramento facility has the capacity to process old newsprint, corrugated cardboard, white and color ledger, computer paper and mixed paper grades. Papers are processed at the facility to the standards required of their dedicated mills. The facility also accepts a variety of beverage containers including aluminum cans, steel cans, color sorted glass and PET plastic. IPS reports that HDPE plastic is not currently accepted because of the time it takes to collect enough material to make it economically worthwhile. The facility reports that it is currently operating at one-third its potential capacity, thus has sufficient capacity to manage increased materials flows from Yolo County.

IPS typically purchases recovered materials on a as-delivered basis. Prices shown in Table 3-2 reflect this condition. IPS can provide a pick-up service at a cost dependant on the type of material, quantity, and location of the pick-up. IPS reports that contractual arrangements are available to regular generators of recovered materials.

Weyerhaeuser Company
Dick Anger
50 S. River Road
West Sacramento, CA
916-371-4170

This firm purchases recovered papers throughout the Sacramento Valley for supply to their associated paper mills. They buy 14 different grades of paper materials. The facility currently operates office paper recycling programs in Sacramento office buildings that generate large amounts of paper in their waste stream. They can provide containers and pick up service, and also accept delivered paper materials. Weyerhaeuser reports that delivery of materials is economically preferable whenever possible. There are no material specifications within specific grades, however, the facility does not accept mixed paper thus materials must be source separated. The facility offers contractual arrangements for recovered papers, and currently has several contracts within Yolo County.

Keyes Fiber Co
Jim Scheeringa
8450 Gerber Rd.
Sacramento, CA
689-2020

This facility is a waste paper end user producing molded pipe fiber for egg and fruit packaging. They use ONP in their production process. A small percentage of their materials comes from brokers and the rest comes from paper drives. Ten percent of their ONP comes form markets in the Bay Area and they reported that they would like to replace that with materials from the Sacramento Valley area. They currently pay $0.15 per ton for ONP.

Gold Bond Building Products
Don Gagnon
800 West Church St.
Stockton, CA
(209) 466-5251

This company uses CPO, white ledger and mix paper at their factory to produce an unspecified product. The firm only accepts baled material. They deal only with large brokers who can sell them material already baled to their specifications.

Proler International
Don New
15332 S. McKinley Avenue
Lathrop CA 95330
1-800-347-2458

This facility takes steel and ferrous containers only. They pay $50 per ton for reasonably clean steel food containers. There are no material specifications. The facility does not have capability for transporting materials but trucking arrangements can be made if so desired. The facility is a major steel recycler in Northern California and reports it is working below capacity.

Reynolds Aluminum
Bill Coffee
777 Arden Way
Sacramento, CA
381-6861

This processing facility buys all CA redemption containers, copper and scrap aluminum. They accept loose and sorted loads but they do not accept baled or processed material. The facility reports they can handle up to one million more containers which would double their current capacity. Reynolds will purchase different grades of copper and scrap aluminum and pay

according to the level of contamination. They operate a mobile collection service that travels throughout the Sacramento Valley. They can also provide drop-off containers at the cost of three to five cents per pound of aluminum.

C and C Metals
Frank Cemo
11320 Dismantle Ct.
Rancho Cordova, CA
635-8750

This facility purchases numerous materials including CA redemption containers, copper, scrap aluminum, heavy iron, and white goods (e.g., refrigerators, stoves, water heaters). They report working under capacity and have the facilities and equipment to handle a large amount of new materials. They own and operate two cranes and furnaces to melt down the scrap metals they receive, and they have several markets in the Sacramento Valley for their product. C and C Metals will not accept the compressors on refrigerators and other white goods unless they are entirely drained of freon and other toxins. Contractual arrangements are available with C and C Metals, and they can provide containers for pick up.

Schnitzer Steel
Tony Guarducci
12000 Folsom Blvd.
Rancho Cordova, CA
985-4810

This facility purchases materials including scrap ferrous, white goods, non-ferrous metals, and tin. They will accept materials either in whole pieces or baled. For appliances, higher market prices are provided if hoses, motors, coolants, plastics, and rubber are removed. The firm does not organize contracts but follows current market conditions. They pay $37 per ton for clean white goods, $17 per ton for raw appliances, clean copper wiring $0.90 per pound, brass $0.50 to $0.60 per pound. The firm has drop-off containers for customers to unload scrap metals.

Atlas Metals
Mike Basile
30 Arden Way
Sacramento, CA
929-7331

This company currently collects scrap aluminum from the Yolo County Central Landfill one to two times per year. They pay $0.45 to $0.48 per pound of material. They report that they receive a maximum of 5,000 pounds per year from the landfill. Atlas Metals service area includes the greater Sacramento Valley.

Stockton Recycling Center
Paul Toots
8240 Berry Avenue
Sacramento, CA
(916) 381-4918

This facility is a relatively small buy-back collection operation in the Valley accepting aluminum, glass and PET containers and scrap aluminum. Their materials market are mainly the larger processors in the Sacramento Valley. They can provide containers with pick up service for the entire Sacramento Valley area. The facility reports it is currently running under capacity and will soon be adding a baler for the addition of new material such as cardboard and newspaper.

Oxford Tire Recyclers
Ken Gross
3418 52nd Ave.
Sacramento, CA
916-424-3158

This facility is a tire recycler only. The facility shreds tires to produce a tire derived fuel (TDF). These tire chips are burned at an energy plant near Modesto, California. Oxford charges a fee of approximately $0.60 per tire. Drop-off service is not provided by Oxford Tire but a pick-up service is available at approximately $800.00 per truck load. They have a large service area covering most of Northern California.

Tire Disposal Service
Tim Goldthwaite
4715 Auburn Blvd.
Sacramento, CA 95841

This service is currently used by Yolo county for disposal of tires collected at YCCL. A fee of $75 per ton is charged for hauling tires from YCCL to a cement kiln in Redding.

Sacramento Battery Co.
Gene Bingaman
3616 W. Capital Ave.
West Sacramento
372-5580

This company currently collects car batteries from the Yolo County Central Landfill. They report that they are currently collecting 100 hundred batteries a month from the landfill. The facility also reports they could handle five times the amount of material they are currently receiving. Recovered batteries are sent to Los Angeles where they are smelted by several companies. The entire battery is typically recycled in the smelting process including the plastic

and acid. Their service area includes most of Northern California. They currently pay $0.50 per battery.

Oil Refinery Service
Ron Parent
13331 HW 33
Patterson, CA
1-800-874-4444

This company currently collects the waste oil form the Yolo County Central Landfill at no charge. They collect from the landfill approximately once every three weeks. They report that 100 percent of the oil is recycled at their Patterson plant, where they refine the oil into ship oil or low grade fuel oil. Their service area includes all of California and some areas in the southwest. They also collect waste oil from Davis Waste Removal (DWR).

Plastics

Local markets for recovered plastics are limited at this time. Currently, PVC pipe is purchased by a local PVC manufacturer in Woodland for $0.02 per pound. Most locally collected HDPE and PET is brokered by Davis Waste Removal for sale to Northern Paper stock in Marin County for $0.02 to $0.05 per pound. Independent Paper Stock in Sacramento also buys PET plastic.

B.6 MARKETING FACTORS

A number of factors affect the price received for recycled materials. Programs vary significantly in terms of volumes collected, how materials are processed before being sent to market, and whether they can secure advantageous pricing. Knowledge or market requirements is important in program design, and can help determine the level of investment in processing equipment that is best suited to running an efficient operation.

B.6.1 Market Specifications

The chief purpose of processing the collected materials is to reduce contaminants to a level that meets the purchase specification for a particular market. A wide variety of methods and equipment are available for handling and processing materials. The procedures and equipment chosen for processing depend largely on throughput volumes, detailed program design, and local market conditions.

These factors and the others described below are considered in the final design phase of a materials recovery program.

B.6.2 Volume of Materials

Most drop-off centers have very little processing capability, and rely heavily on local markets to supply containers and transportation for the bulk of the recycled materials.

Numerous paper dealers, for example, will provide roll-off bins or overseas shipping containers if a program can collect enough newspaper to fill the container in a few days. The price paid for paper collected in this manner is often the same or lower than the dealer's door price, in order to cover the buyer's extra expense for equipment and transportation. Low volume collection programs usually will have to deliver materials to market because the buyer is unwilling to tie up equipment such as roll-offs for long periods of time with little volume generated.

Programs that are large enough to collect a steady stream of materials, can receive better prices because they make better use of the buyer's equipment. A high volume recovery program can provide the buyer with a steady supply of materials, and therefore earn a premium price as a preferred customer. Many paper dealers in the area would encourage the larger recovery programs to establish long-term purchase agreements in order to maintain a consistent supply of ONP or OCC. Most paper end-users, the mills that manufacture new paper products, do not

provide transportation for either loose ONP or OCC, preferring instead to buy direct from paper dealers (such as Independent Paper stock and Weyerhaeuser locally).

B.6.3 Densification

The advantages of densifying can be considerable, especially when a recovery program can meet industry-established specification for ONP, OCC, aluminum, and tin can bales with one high-density baler. Baled materials can give a recycling operator access to end-user markets (paper mills, aluminum smelters, de-tinning plants, etc.) that otherwise would be unavailable. The main reasons for baling are to reduce transportation costs by shipping high-density products to markets, to enhance storage capacity at the recycling facility, and to improve marketing options by accessing end-user as well as dealer/processor markets for the materials.

B.6.4 Hauling Distances

Recovered materials (with the possible exception of aluminum) are generally low value commodities on a per ton basis. Therefore, the economics of recovery is very sensitive to hauling distances. All else being equal, the shorter the hauling distance to the buyer or end-user, the more profitable that material sale will be. Factoring in the cost of materials hauling is an important step in evaluating different markets for a given material.

B.6.5 Contaminants

As materials markets become increasingly competitive, the quality of a given amount of material will become an increasingly important factor to the county's access to markets. In general, the cleaner the load, the more markets, and better prices, will be found. To stay competitive against other jurisdictions, relatively very low contamination levels will need to be sustained. The county will, however, need to balance the additional cost of providing cleaner loads against the increased market value of those loads.

B.6.6 Contract Versus Open Market

There can be some benefits to recovery programs in securing a purchase contract with a scrap dealer. When demand is low and local markets are turning off supply through depressed door prices, a program with a long-term supply commitment to a dealer can rely on that market to absorb its materials. Recovery program operators who "play the market" and change buyers according to the highest available spot price, may find themselves with no available market at times when mill demand is low. Supplier loyalty is valued in the waste industry. The long-term contract can be designed to reflect current pricing based on industrywide supply/demand fluctuations, thus securing a level of fair market price for their material regardless of changing prices over time. The risk of losing short term profits when compared to the risk of losing a market can make purchase contracts a worthwhile consideration in the long term.

APPENDIX C

WASTE DIVERSION MODEL

APPENDIX C

SUPPORTING INFORMATION FOR THE INTEGRATION COMPONENT

The Integration Component for unincorporated Yolo County unites the diversion programs recommended in the Source Reduction, Recycling, Composting, and Special Waste components. The component gives an overview of the planned diversion activities including discussion of the integration and prioritization of programs, progress towards of the diversion mandates, and disposal requirements. The component also includes an implementation schedule for all tasks required to implement the diversion programs. This appendix focuses on the process that was used to project the diversion levels for 1995 and 2000.

Overview of the Waste Diversion Model

As indicated in the Integration Component, the Waste Diversion Model (WDM) served as a tool to integrate all waste diversion programs. The WDM is a computer model that examines each diversion program and its contribution to the total projected diversion level for the county. Ten WDMs were used to estimate diversion levels for the generator types (residential, commercial, industrial, other, and U.C. Davis) for 1995 and 2000. Two summary tables combined the information generated in the ten WDMs.

Waste Diversion Model Analysis

For each WDM, the waste composition of the generator type, projected total waste stream quantity, projected waste quantity for the generator, and projected diversion rates of each diversion program by material type were input. The WDM then calculated the tonnage diverted for each material by program type and the percentage of the total waste stream diverted. Two summary tables were used to determine the total diversion levels for the county for 1995 and 2000. Each summary table calculated the total diversion level by summing the diversion rates of each diversion program for each generator type.

The WDM was designed to allow the user easily to modify the input. By modifying input data, the WDMs tested different combinations of programs and targeted materials. By establishing different waste diversion program scenarios, the best combination of diversion programs and materials was identified and the implementation schedule of the diversion programs was prioritized. The feasibility of projected diversion levels was examined using the WDM results and checking the waste diversion level for each material type, program, sector, and total waste stream to ensure that the rates fall within reasonable ranges.

Source of Waste Diversion Model Input Information

The waste composition and projected waste quantity information input into the WDMs was obtained from the county's Solid Waste Generation Study. The diversion rates projected for each program were developed based on existing program information, performance of similar programs in other jurisdictions, and best professional judgment.

Results of the Waste Diversion Model

The results of the waste diversion model are shown in the following tables. The tables include summary tables and the WDMs for residential, commercial, industrial, other, and U.C. Davis waste diversion programs for 1995 and 2000. The WDMs show the tonnages diverted by individual material type for each program and generator type for 1995 and 2000.

1995 Summary Table by Program Type

02/02/93

Unincorprated Yolo County (incl. UC Davis)
Waste Diversion Model

Program Type	Percentage of the Waste Stream Diverted					
	Residential	Commercial	Industrial	Other	UC Davis	Total
Source Reduction:						
UC Davis programs	0.0%	0.0%	0.0%	0.0%	1.4%	1.4%
Recycling:						
Drop-off centers	0.3%	0.0%	0.0%	0.0%	0.0%	0.3%
Office paper recovery	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
Bin transfer facility	0.2%	0.0%	0.0%	0.7%	0.0%	0.9%
UC Davis recycling	0.0%	0.0%	0.0%	0.0%	1.5%	1.5%
Composting:						
Yard debris composting	0.3%	0.6%	0.3%	0.0%	0.0%	1.2%
UC Davis composting	0.0%	0.0%	0.0%	0.0%	8.5%	8.5%
Special Waste						
County programs	0.3%	6.6%	1.1%	0.0%	0.0%	8.0%
UC Davis programs	0.0%	0.0%	0.0%	0.0%	9.7%	9.7%
Total	1.0%	7.4%	1.3%	0.7%	21.0%	31.4%

RESIDENTIAL WASTE STREAM		1995
Unincorporated Yolo County		
Residential Waste	=	7,856
Total Waste Stream	=	37,585

Note: For each program, percent is the percent diverted of the waste type

			DROP-OFF CENTERS		BIN TRANSFER FACILITY		YARD DEBRIS COMPOSTING		SPECIAL WASTE		SUMMARY TOTALS		
WASTE TYPE	% COMP	TONS	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	TTL TONS DIVERTED	RESIDEN WASTE	TOTAL WASTE
PAPER													
Newspaper	7.9%	618	6.6%	40.7	0.0%	0.0	0.0%	0	0.0%	0	41	0.5%	0.1%
Corrugated	4.9%	382	3.9%	15.0	0.0%	0.0	0.0%	0	0.0%	0	15	0.2%	0.0%
High-Grade	2.4%	192	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Mixed	10.6%	829	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Cont. paper	11.3%	889	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
PLASTICS													
PET	0.3%	26	7.7%	2.0	0.0%	0.0	0.0%	0	0.0%	0	2	0.0%	0.0%
HDPE	1.1%	86	2.3%	2.0	0.0%	0.0	0.0%	0	0.0%	0	2	0.0%	0.0%
Pigmented HDPE	0.3%	21	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
PS	0.6%	49	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Film	2.9%	226	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other plastics	4.6%	360	1.1%	3.8	0.0%	0.0	0.0%	0	0.0%	0	4	0.0%	0.0%
GLASS													
CA redemption	1.0%	77	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other recyclable	4.0%	318	10.2%	32.5	0.0%	0.0	0.0%	0	0.0%	0	33	0.4%	0.1%
Non-recyclable	0.0%	1	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
METALS													
Aluminum cans	0.6%	46	18.3%	8.4	0.0%	0.0	0.0%	0	0.0%	0	8	0.1%	0.0%
Bi-metal/tin	3.4%	264	1.8%	4.8	0.0%	0.0	0.0%	0	0.0%	0	5	0.1%	0.0%
Ferrous metal	2.0%	160	0.0%	0.0	5.0%	8.0	0.0%	0	0.0%	0	8	0.1%	0.0%
Non-ferrous metal	0.2%	19	0.0%	0.0	10.0%	1.9	0.0%	0	0.0%	0	2	0.0%	0.0%
White goods	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
YARD WASTE													
Grass, leaves	4.6%	359	0.0%	0.0	0.0%	0.0	20.0%	72	0.0%	0	72	0.9%	0.2%
Prunings	1.7%	136	0.0%	0.0	0.0%	0.0	20.0%	27	0.0%	0	27	0.3%	0.1%
Mixed yard waste	0.0%	0	0.0%	0.0	0.0%	0.0	20.0%	0	0.0%	0	0	0.0%	0.0%
OTHER ORGANICS													
Food	9.1%	715	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Tires	0.2%	17	0.0%	0.0	0.0%	0.0	0.0%	0	10.0%	2	2	0.0%	0.0%
Rubber	3.3%	260	0.0%	0.0	5.0%	13.0	0.0%	0	0.0%	0	13	0.2%	0.0%
Wood waste	0.4%	34	0.0%	0.0	0.0%	0.0	20.0%	7	0.0%	0	7	0.1%	0.0%
Wood	0.4%	31	0.0%	0.0	5.2%	1.6	0.0%	0	50.0%	16	17	0.2%	0.0%
Ag crop residue	0.0%	0	0.0%	0.0	0.0%	0.0	20.0%	0	0.0%	0	0	0.0%	0.0%
Manure	0.1%	5	0.0%	0.0	0.0%	0.0	20.0%	1	0.0%	0	1	0.0%	0.0%
Disposable diapers	8.7%	528	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Textiles, leather	3.7%	291	0.0%	0.0	10.0%	29.1	0.0%	0	0.0%	0	29	0.4%	0.1%
OTHER WASTES													
Asphalt	0.0%	1	0.0%	0.0	0.0%	0.0	0.0%	0	85.0%	1	1	0.0%	0.0%
Concrete	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Inert solids	1.3%	103	0.0%	0.0	0.0%	0.0	0.0%	0	85.0%	88	88	1.1%	0.2%
Composite materials	1.9%	146	0.0%	0.0	10.0%	14.6	0.0%	0	0.0%	0	15	0.2%	0.0%
HHW material/cont.	0.3%	25	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Misc.	8.0%	628	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
SPECIAL WASTES													
Ash	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Medical waste	0.2%	12	0.0%	0.0	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%	0	0	0.0%	0.0%
Auto bodies	0.0%	0	0.0%	0.0	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%	0	0	0.0%	0.0%
Other special	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Construction/demol.	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Residential waste	100.0%	7854	1.4%	109.2	0.9%	68.2	1.4%	107	1.3%	106	390	5.0%	1.0%
Total Waste Stream			0.3%		0.2%		0.3%		0.3%				

COMMERCIAL WASTE STREAM		1995
Unincorporated Yolo County		
Commercial Waste	=	7,707
Total Waste Stream	=	37,585

Note: For each program, percent is the percent diverted of the waste type.

			OFFICE PAPER RECOVERY		YARD DEBRIS COMPOSTING		SPECIAL WASTE		SUMMARY TOTALS		
WASTE TYPE	% COMP	TONS	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	TTL TONS DIVERTED	COMM. WASTE	TOTAL WASTE
PAPER											
Newspaper	0.7%	54	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Corrugated	20.6%	1587	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
High-Grade	11.0%	847	6.6%	56	0.0%	0	0.0%	0	56	0.7%	0.1%
Mixed	0.8%	61	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Cont. paper	2.8%	212	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
PLASTICS											
PET	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
HDPE	0.0%	1	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%	0.0%
PS	0.1%	6	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Film	1.0%	75	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other plastics	0.3%	23	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
GLASS											
CA redemption	1.5%	119	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other recyclable	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Non-recyclable	1.1%	85	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
METALS											
Aluminum cans	0.0%	3	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Bi-metal/tin	0.1%	5	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Ferrous metal	3.6%	275	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Non-ferrous metal	0.0%	1	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%	0.0%
YARD WASTE											
Grass, leaves	0.0%	0	0.0%	0	20.0%	0	0.0%	0	0	0.0%	0.0%
Prunings	0.0%	0	0.0%	0	20.0%	0	0.0%	0	0	0.0%	0.0%
Mixed yard waste	0.0%	0	0.0%	0	20.0%	0	0.0%	0	0	0.0%	0.0%
OTHER ORGANICS											
Food	1.1%	85	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Tires	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Rubber	0.2%	17	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Wood waste	15.3%	1182	0.0%	0	20.0%	236	0.0%	0	236	3.1%	0.6%
Wood	3.8%	293	0.0%	0	0.0%	0	80.0%	234	234	3.0%	0.6%
Ag crop residue	0.0%	0	0.0%	0	20.0%	0	0.0%	0	0	0.0%	0.0%
Manure	0.0%	0	0.0%	0	20.0%	0	0.0%	0	0	0.0%	0.0%
Disposable diapers	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Textiles, leather	1.1%	85	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
OTHER WASTES											
Asphalt	0.0%	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%	0.0%
Inert solids	34.3%	2642	0.0%	0	0.0%	0	85.0%	2246	2246	29.1%	6.0%
Composite materials	0.2%	14	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
HHW material/cont.	0.2%	12	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Misc.	0.3%	24	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
SPECIAL WASTES											
Ash	0.0%	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%	0.0%
Auto shredder	0.0%	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%	0.0%
Bulky waste	0.0%	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%	0.0%
Construction/demol.	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Commercial Waste	**100.0%**	**7708**	**0.7%**	**56**	**3.1%**	**236**	**32.2%**	**2480**	**2773**	**36.0%**	**7.4%**
Total Waste Stream			**0.1%**		**0.6%**		**6.6%**				

INDUSTRIAL WASTE STREAM		1995
Unincorporated Yolo County		
Industrial Waste	=	2,060
Total Waste Stream	=	37,585

Note: For each program, percent is the percent diverted of the waste type.

			YARD DEBRIS COMPOSTING		SPECIAL WASTE		SUMMARY TOTALS		
WASTE TYPE	% COMP	TONS	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	TTL TONS DIVERTED	Industrial WASTE	TOTAL WASTE
PAPER									
Newspaper	1.0%	21	0.0%	0	0.0%	0	0	0.0%	0.0%
Corrugated	34.3%	706	0.0%	0	0.0%	0	0	0.0%	0.0%
High-Grade	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Mixed	3.9%	81	0.0%	0	0.0%	0	0	0.0%	0.0%
Cont. paper	5.7%	117	0.0%	0	0.0%	0	0	0.0%	0.0%
PLASTICS									
PET	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
HDPE	0.1%	2	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%
PS	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Film	2.0%	42	0.0%	0	0.0%	0	0	0.0%	0.0%
Other plastics	0.5%	11	0.0%	0	0.0%	0	0	0.0%	0.0%
GLASS									
CA redemption	0.3%	7	0.0%	0	0.0%	0	0	0.0%	0.0%
Other recyclable	0.1%	2	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%
METALS									
Aluminum cans	0.0%	1	0.0%	0	0.0%	0	0	0.0%	0.0%
Bi-metal/tin	0.0%	1	0.0%	0	0.0%	0	0	0.0%	0.0%
Ferrous metal	2.0%	41	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%
White goods	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
YARD WASTE									
Grass, leaves	0.0%	0	20.0%	0	0.0%	0	0	0.0%	0.0%
Prunings	2.4%	49	20.0%	10	0.0%	0	10	0.5%	0.0%
Mixed yard waste	0.0%	0	20.0%	0	0.0%	0	0	0.0%	0.0%
OTHER ORGANICS									
Food	0.5%	11	0.0%	0	0.0%	0	0	0.0%	0.0%
Tires	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Rubber	0.1%	3	0.0%	0	0.0%	0	0	0.0%	0.0%
Wood waste	21.2%	437	20.0%	87	0.0%	0	87	4.2%	0.2%
Wood	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Ag crop residue	0.0%	0	20.0%	0	0.0%	0	0	0.0%	0.0%
Manure	0.0%	0	20.0%	0	0.0%	0	0	0.0%	0.0%
Disposable diapers	0.1%	3	0.0%	0	0.0%	0	0	0.0%	0.0%
Textiles, leather	0.4%	9	0.0%	0	0.0%	0	0	0.0%	0.0%
OTHER WASTES									
Asphalt	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%
Inert solids	23.1%	475	0.0%	0	85.0%	404	404	19.6%	1.1%
Composite materials	0.3%	6	0.0%	0	0.0%	0	0	0.0%	0.0%
HHW material/cont.	1.6%	32	0.0%	0	0.0%	0	0	0.0%	0.0%
Misc.	0.1%	2	0.0%	0	0.0%	0	0	0.0%	0.0%
SPECIAL WASTES									
Ash	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%
Auto shredder	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%
Bulky waste	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%
Construction/demol.	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Industrial Waste	**100.0%**	**2059**	**4.7%**	**97**	**19.6%**	**404**	**501**	**24.3%**	**1.3%**
Total Waste Stream			**0.3%**		**1.1%**				

SELF-HAUL WASTE STREAM		1995
Unincorporated Yolo County		
Self-Haul Waste	=	645
Total Waste Stream	=	37,585

Note: For each program, percent is the percent diverted of the waste type.

			BIN TRANSFER FACILITY		SUMMARY TOTALS		
WASTE TYPE	% COMP	TONS	PERCENT	TONS DIVERTED	TTL TONS DIVERTED	Other WASTE	TOTAL WASTE
PAPER							
Newspaper	0.0%	0	0.0%	0	0	0.0%	0.0%
Corrugated	0.0%	0	0.0%	0	0	0.0%	0.0%
High-Grade	0.0%	0	0.0%	0	0	0.0%	0.0%
Mixed	0.0%	0	0.0%	0	0	0.0%	0.0%
Cont. paper	0.0%	0	0.0%	0	0	0.0%	0.0%
PLASTICS							
PET	0.0%	0	0.0%	0	0	0.0%	0.0%
HDPE	0.0%	0	0.0%	0	0	0.0%	0.0%
Pigmented HDPE	0.0%	0	0.0%	0	0	0.0%	0.0%
PS	0.0%	0	0.0%	0	0	0.0%	0.0%
Film	0.0%	0	0.0%	0	0	0.0%	0.0%
Other plastics	0.0%	0	0.0%	0	0	0.0%	0.0%
GLASS							
CA redemption	0.0%	0	0.0%	0	0	0.0%	0.0%
Other recyclable	0.0%	0	0.0%	0	0	0.0%	0.0%
Non-recyclable	0.0%	0	0.0%	0	0	0.0%	0.0%
METALS							
Aluminum cans	0.0%	0	0.0%	0	0	0.0%	0.0%
Bi-metal/tin	0.0%	0	0.0%	0	0	0.0%	0.0%
Ferrous metal	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%
White goods	1.6%	10	100.0%	10	10	1.6%	0.0%
YARD WASTE							
Grass, leaves	0.0%	0	0.0%	0	0	0.0%	0.0%
Prunings	0.0%	0	0.0%	0	0	0.0%	0.0%
Mixed yard waste	1.1%	7	100.0%	7	7	1.1%	0.0%
OTHER ORGANICS							
Food	0.0%	0	0.0%	0	0	0.0%	0.0%
Tires	0.0%	0	0.0%	0	0	0.0%	0.0%
Rubber	0.0%	0	0.0%	0	0	0.0%	0.0%
Wood waste	0.0%	0	0.0%	0	0	0.0%	0.0%
Wood	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%
Manure	0.0%	0	0.0%	0	0	0.0%	0.0%
Disposable diapers	0.0%	0	0.0%	0	0	0.0%	0.0%
Textiles, leather	0.0%	0	0.0%	0	0	0.0%	0.0%
OTHER WASTES							
Asphalt	0.0%	0	0.0%	0	0	0.0%	0.0%
Concrete	0.0%	0	0.0%	0	0	0.0%	0.0%
Inert solids	0.0%	0	0.0%	0	0	0.0%	0.0%
Composite materials	0.0%	0	0.0%	0	0	0.0%	0.0%
HHW material/cont.	0.0%	0	0.0%	0	0	0.0%	0.0%
Misc.	36.1%	233	0.0%	0	0	0.0%	0.0%
SPECIAL WASTES							
Ash	0.0%	0	0.0%	0	0	0.0%	0.0%
Medical waste	0.0%	0	0.0%	0	0	0.0%	0.0%
Auto shredder	0.0%	0	0.0%	0	0	0.0%	0.0%
Auto bodies	0.0%	0	0.0%	0	0	0.0%	0.0%
Bulky waste	1.7%	11	50.0%	6	6	0.9%	0.0%
Other special	0.0%	0	0.0%	0	0	0.0%	0.0%
Construction/demol.	59.5%	384	60.0%	230	230	35.7%	0.6%
Other Waste	100.0%	645	39.2%	253	253	39.2%	0.7%
Total Waste Stream			0.7%				

U.C. DAVIS WASTE STREAM	1995		
Unincorporated Yolo County			
U.C. Davis Waste	=	19,318	tons
Total Waste Stream	=	37,585	tons

Note: For each program, percent is the percent diverted of the U.C. Davis waste stream.

WASTE TYPE	DISPOSAL % COMP	SOURCE REDUCTION PERCENT	SOURCE REDUCTION TONS DIVERTED	UCD RECYCLING PERCENT	UCD RECYCLING TONS DIVERTED	UCD COMPOSTING PERCENT	UCD COMPOSTING TONS DIVERTED	UCD SPECIAL WASTE PERCENT	UCD SPECIAL WASTE TONS DIVERTED	SUMMARY TOTALS TTL TONS DIVERTED	SUMMARY TOTALS UC DAVIS WASTE	SUMMARY TOTALS TOTAL WASTE
PAPER												
Newspaper	2.6%	0.0%	0	0.4%	68	0.0%	0	0.0%	0	68	0.4%	0.2%
Corrugated	7.1%	0.0%	0	0.9%	165	0.0%	0	0.0%	0	165	0.9%	0.4%
High-Grade	5.6%	2.4%	464	0.6%	125	0.0%	0	0.0%	0	589	3.0%	1.6%
Mixed	5.4%	0.0%	0	0.5%	90	0.0%	0	0.0%	0	90	0.5%	0.2%
Cont. paper	11.3%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
PLASTICS												
PET	0.1%	0.0%	0	0.0%	1	0.0%	0	0.0%	0	1	0.0%	0.0%
HDPE	0.2%	0.0%	0	0.0%	4	0.0%	0	0.0%	0	4	0.0%	0.0%
Pigmented HDPE	0.5%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
PS	0.3%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Film	2.6%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other plastics	5.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
GLASS												
CA redemption	0.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other recyclable	0.8%	0.0%	0	0.4%	68	0.0%	0	0.0%	0	68	0.4%	0.2%
Non-recyclable	0.5%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
METALS												
Aluminum cans	0.2%	0.0%	0	0.0%	3	0.0%	0	0.0%	0	3	0.0%	0.0%
Bi-metal/tin	0.8%	0.0%	0	0.2%	36	0.0%	0	0.0%	0	36	0.2%	0.1%
Ferrous metal	0.6%	0.0%	0	0.0%	0	0.0%	0	1.3%	251	251	1.3%	0.7%
Non-ferrous metal	0.2%	0.0%	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	0.0%	0.0%
YARD WASTE												
Grass, leaves	1.2%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Prunings	1.7%	0.0%	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	0.0%	0.0%
OTHER ORGANICS												
Food	3.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Tires	0.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Rubber	1.3%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Wood waste	3.3%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Wood	0.1%	0.0%	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	0.0%	0.0%
Manure	20.5%	0.0%	0	0.0%	0	16.5%	3187	0.0%	0	3187	16.5%	8.5%
Disposable diapers	0.9%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Textiles, leather	1.8%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
OTHER WASTES												
Asphalt	0.0%	0.0%	0	0.0%	0	0.0%	0	8.7%	1690	1690	8.7%	4.5%
Concrete	0.0%	0.0%	0	0.0%	0	0.0%	0	8.8%	1691	1691	8.8%	4.5%
Inert solids	3.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Composite materials	0.5%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
HHW material/cont.	0.2%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Misc.	1.5%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
SPECIAL WASTES												
Ash	0.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Medical waste	7.5%	0.0%	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	0.0%	0.0%
Auto bodies	0.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Bulky waste	5.2%	0.3%	58	0.0%	0	0.0%	0	0.0%	0	58	0.3%	0.2%
Other special	0.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Construction/demol.	3.7%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
U.C. Davis Waste	**99.2%**	**2.7%**	**522**	**2.9%**	**560**	**16.5%**	**3187**	**18.8%**	**3632**	**7901**	**40.9%**	**21.0%**
Total Waste Stream		**1.4%**		**1.5%**		**8.5%**		**9.7%**				

2000 Summary Table by Program Type

02/02/93

Unincorporated Yolo County (incl. UC Davis)
Waste Diversion Model

Program Type	Percentage of the Total Waste Stream Diverted					
	Residential	Commercial	Industrial	Other	UC Davis	Total
Source Reduction:						
UC Davis programs	0.0%	0.0%	0.0%	0.0%	1.3%	1.3%
Recycling:						
Drop-off centers	0.3%	0.0%	0.0%	0.0%	0.0%	0.3%
Office paper recovery	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%
Bin transfer facility	0.2%	0.0%	0.0%	0.9%	0.0%	1.1%
Materials recovery	0.0%	5.0%	1.6%	0.0%	0.0%	6.6%
UC Davis recycling	0.0%	0.0%	0.0%	0.0%	6.6%	6.6%
Composting:						
Yard debris composting	0.6%	2.6%	1.0%	0.0%	0.0%	4.2%
UC Davis composting	0.0%	0.0%	0.0%	0.0%	15.8%	15.8%
Special Waste:						
County programs	0.3%	7.2%	1.2%	0.0%	0.0%	8.7%
UC Davis programs	0.0%	0.0%	0.0%	0.0%	10.6%	10.6%
Total	1.4%	15.0%	3.8%	0.9%	34.4%	55.5%

RESIDENTIAL WASTE STREAM		2000
Unincorporated Yolo County		
Residential Waste	=	8,887
Total Waste Stream	=	41,071

Note: For each program, percent is the percent diverted of the waste type.

			DROP-OFF CENTERS		BIN TRANSFER FACILITY		YARD DEBRIS COMPOSTING		SPECIAL WASTE		SUMMARY TOTALS		
WASTE TYPE	% COMP	TONS	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	TTL TONS DIVERTED	RESIDEN WASTE	TOTAL WASTE
PAPER													
Newspaper	7.9%	699	7.4%	52.0	0.0%	0.0	0.0%	0	0.0%	0	52	0.6%	0.1%
Corrugated	4.9%	433	4.4%	19.1	0.0%	0.0	0.0%	0	0.0%	0	19	0.2%	0.0%
High-Grade	2.4%	217	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Mixed	10.6%	938	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Cont. paper	11.3%	1006	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
PLASTICS													
PET	0.3%	29	6.9%	2.0	0.0%	0.0	0.0%	0	0.0%	0	2	0.0%	0.0%
HDPE	1.1%	97	2.1%	2.0	0.0%	0.0	0.0%	0	0.0%	0	2	0.0%	0.0%
Pigmented HDPE	0.3%	24	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
PS	0.6%	55	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Film	2.9%	256	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other plastics	4.6%	407	1.2%	4.8	0.0%	0.0	0.0%	0	0.0%	0	5	0.1%	0.0%
GLASS													
CA redemption	1.0%	87	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other recyclable	4.1%	360	11.5%	41.5	0.0%	0.0	0.0%	0	0.0%	0	42	0.5%	0.1%
Non-recyclable	0.0%	1	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
METALS													
Aluminum cans	0.6%	52	20.6%	10.7	0.0%	0.0	0.0%	0	0.0%	0	11	0.1%	0.0%
Bi-metal/tin	3.4%	298	2.0%	6.1	0.0%	0.0	0.0%	0	0.0%	0	6	0.1%	0.0%
Ferrous metal	2.0%	180	0.0%	0.0	5.0%	9.0	0.0%	0	0.0%	0	9	0.1%	0.0%
Non-ferrous metal	0.2%	22	0.0%	0.0	10.0%	2.2	0.0%	0	0.0%	0	2	0.0%	0.0%
White goods	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
YARD WASTE													
Grass, leaves	4.6%	406	0.0%	0.0	0.0%	0.0	40.0%	162	0.0%	0	162	1.8%	0.4%
Prunings	1.7%	154	0.0%	0.0	0.0%	0.0	40.0%	62	0.0%	0	62	0.7%	0.1%
Mixed yard waste	0.0%	0	0.0%	0.0	0.0%	0.0	40.0%	0	0.0%	0	0	0.0%	0.0%
OTHER ORGANICS													
Food	9.1%	809	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Tires	0.2%	19	0.0%	0.0	0.0%	0.0	0.0%	0	25.0%	5	5	0.1%	0.0%
Rubber	3.3%	294	0.0%	0.0	5.0%	14.7	0.0%	0	0.0%	0	15	0.2%	0.0%
Wood waste	0.4%	38	0.0%	0.0	0.0%	0.0	40.0%	15	0.0%	0	15	0.2%	0.0%
Wood	0.4%	35	0.0%	0.0	5.1%	1.8	0.0%	0	50.0%	18	19	0.2%	0.0%
Ag crop residue	0.0%	0	0.0%	0.0	0.0%	0.0	40.0%	0	0.0%	0	0	0.0%	0.0%
Manure	0.1%	5	0.0%	0.0	0.0%	0.0	40.0%	2	0.0%	0	2	0.0%	0.0%
Disposable diapers	6.7%	598	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Textiles, leather	3.7%	329	0.0%	0.0	10.0%	32.9	0.0%	0	0.0%	0	33	0.4%	0.1%
OTHER WASTES													
Asphalt	0.0%	1	0.0%	0.0	0.0%	0.0	0.0%	0	90.0%	1	1	0.0%	0.0%
Concrete	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Inert solids	1.3%	116	0.0%	0.0	0.0%	0.0	0.0%	0	90.0%	104	104	1.2%	0.3%
Composite materials	1.9%	165	0.0%	0.0	10.0%	16.5	0.0%	0	0.0%	0	17	0.2%	0.0%
HHW material/cont.	0.3%	28	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Misc.	8.0%	710	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
SPECIAL WASTES													
Ash	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Medical waste	0.2%	14	0.0%	0.0	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%	0	0	0.0%	0.0%
Auto bodies	0.0%	0	0.0%	0.0	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%	0	0	0.0%	0.0%
Other special	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Construction/demol.	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0	0	0.0%	0.0%
Residential waste	99.9%	8,882	1.6%	138.2	0.9%	77.1	2.7%	241	1.4%	128	584	6.6%	1.4%
Total Waste Stream			0.3%		0.2%		0.6%		0.3%				

COMMERCIAL WASTE STREAM		2000
Unincorporated Yolo County		
Commercial Waste	=	8,719
Total Waste Stream	=	41,071

Note: For each program, percent is the percent diverted of the waste type.

			OFFICE PAPER RECOVERY		MATERIALS RECOVER FACILITY		YARD DEBRIS COMPOSTING		SPECIAL WASTE		SUMMARY TOTALS		
WASTE TYPE	% COMP	TONS	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	TTL TONS DIVERTED	COMM. WASTE	TOTAL WASTE
PAPER													
Newspaper	0.7%	61	0.0%	0.0	50.0%	31	0.0%	0	0.0%	0	31	0.3%	0.1%
Corrugated	20.6%	1796	0.0%	0.0	70.0%	1257	0.0%	0	0.0%	0	1257	14.4%	3.1%
High-Grade	11.0%	959	7.5%	71.7	50.0%	480	0.0%	0	0.0%	0	551	6.3%	1.3%
Mixed	0.8%	69	0.0%	0.0	20.0%	14	0.0%	0	0.0%	0	14	0.2%	0.0%
Cont. paper	2.7%	239	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
PLASTICS													
PET	0.0%	0	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
HDPE	0.0%	1	0.0%	0.0	50.0%	1	0.0%	0	0.0%	0	1	0.0%	0.0%
Pigmented HDPE	0.0%	0	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
PS	0.1%	6	0.0%	0.0	50.0%	3	0.0%	0	0.0%	0	3	0.0%	0.0%
Film	1.0%	84	0.0%	0.0	25.0%	21	0.0%	0	0.0%	0	21	0.2%	0.1%
Other plastics	0.3%	26	0.0%	0.0	10.0%	3	0.0%	0	0.0%	0	3	0.0%	0.0%
GLASS													
CA redemption	1.5%	134	0.0%	0.0	20.0%	27	0.0%	0	0.0%	0	27	0.3%	0.1%
Other recyclable	0.0%	0	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Non-recyclable	1.1%	96	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
METALS													
Aluminum cans	0.0%	4	0.0%	0.0	75.0%	3	0.0%	0	0.0%	0	3	0.0%	0.0%
Bi-metal/tin	0.1%	5	0.0%	0.0	60.0%	3	0.0%	0	0.0%	0	3	0.0%	0.0%
Ferrous metal	3.6%	311	0.0%	0.0	60.0%	187	0.0%	0	0.0%	0	187	2.1%	0.5%
Non-ferrous metal	0.0%	1	0.0%	0.0	60.0%	1	0.0%	0	0.0%	0	1	0.0%	0.0%
White goods	0.0%	0	0.0%	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	40.0%	0	0.0%	0	0	0.0%	0.0%
Prunings	0.0%	0	0.0%	0.0	0.0%	0	40.0%	0	0.0%	0	0	0.0%	0.0%
Mixed yard waste	0.0%	0	0.0%	0.0	0.0%	0	40.0%	0	0.0%	0	0	0.0%	0.0%
OTHER ORGANICS													
Food	1.1%	96	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Tires	0.0%	0	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Rubber	0.2%	19	0.0%	0.0	25.0%	5	0.0%	0	0.0%	0	5	0.1%	0.0%
Wood waste	15.3%	1337	0.0%	0.0	0.0%	0	80.0%	1070	0.0%	0	1070	12.3%	2.6%
Wood	3.8%	332	0.0%	0.0	0.0%	0	0.0%	0	80.0%	266	266	3.0%	0.6%
Ag crop residue	0.0%	0	0.0%	0.0	0.0%	0	40.0%	0	0.0%	0	0	0.0%	0.0%
Manure	0.0%	0	0.0%	0.0	0.0%	0	40.0%	0	0.0%	0	0	0.0%	0.0%
Disposable diapers	0.0%	0	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Textiles, leather	1.1%	96	0.0%	0.0	25.0%	24	0.0%	0	0.0%	0	24	0.3%	0.1%
OTHER WASTES													
Asphalt	0.0%	0	0.0%	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	0	0.0%	0.0%
Inert solids	34.3%	2989	0.0%	0.0	0.0%	0	0.0%	0	90.0%	2690	2690	30.9%	6.5%
Composite materials	0.2%	15	0.0%	0.0	25.0%	4	0.0%	0	0.0%	0	4	0.0%	0.0%
HHW material/cont.	0.2%	14	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Misc.	0.3%	27	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
SPECIAL WASTES													
Ash	0.0%	0	0.0%	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	0	0.0%	0.0%
Auto shredder	0.0%	0	0.0%	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	0	0.0%	0.0%
Bulky waste	0.0%	0	0.0%	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	0	0.0%	0.0%
Construction/demol.	0.0%	0	0.0%	0.0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Commercial Waste	**100.0%**	**8717**	**0.8%**	**71.7**	**23.6%**	**2061**	**12.3%**	**1070**	**33.9%**	**2956**	**6158**	**70.6%**	**15.0%**
Total Waste Stream			**0.2%**		**5.0%**		**2.6%**		**7.2%**				

INDUSTRIAL WASTE STREAM		2000
Unincorporated Yolo County		
Industrial Waste	=	2,331
Total Waste Stream	=	41,671

Note: For each program, percent is the percent diverted of the waste type.

			MATERIALS RECOVER FACILITY		YARD DEBRIS COMPOSTING		SPECIAL WASTE		SUMMARY TOTALS		
WASTE TYPE	% COMP	TONS	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	TTL TONS DIVERTED	Industrial WASTE	TOTAL WASTE
PAPER											
Newspaper	1.0%	24	50.0%	12	0.0%	0	0.0%	0	12	0.5%	0.0%
Corrugated	34.3%	799	70.0%	559	0.0%	0	0.0%	0	559	24.0%	1.4%
High-Grade	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Mixed	3.9%	92	20.0%	18	0.0%	0	0.0%	0	18	0.8%	0.0%
Cont. paper	5.7%	132	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
PLASTICS											
PET	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
HDPE	0.1%	3	50.0%	2	0.0%	0	0.0%	0	2	0.1%	0.0%
Pigmented HDPE	0.0%	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%	0.0%
Film	2.0%	47	25.0%	12	0.0%	0	0.0%	0	12	0.5%	0.0%
Other plastics	0.6%	13	10.0%	1	0.0%	0	0.0%	0	1	0.1%	0.0%
GLASS											
CA redemption	0.3%	8	20.0%	2	0.0%	0	0.0%	0	2	0.1%	0.0%
Other recyclable	0.1%	3	50.0%	2	0.0%	0	0.0%	0	2	0.1%	0.0%
Non-recyclable	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
METALS											
Aluminum cans	0.0%	1	75.0%	1	0.0%	0	0.0%	0	1	0.0%	0.0%
Bi-metal/tin	0.0%	1	60.0%	1	0.0%	0	0.0%	0	1	0.0%	0.0%
Ferrous metal	2.0%	46	60.0%	28	0.0%	0	0.0%	0	28	1.2%	0.1%
Non-ferrous metal	0.0%	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%	0.0%
YARD WASTE											
Grass, leaves	0.0%	0	0.0%	0	40.0%	0	0.0%	0	0	0.0%	0.0%
Prunings	2.4%	55	0.0%	0	40.0%	22	0.0%	0	22	0.9%	0.1%
Mixed yard waste	0.0%	0	0.0%	0	40.0%	0	0.0%	0	0	0.0%	0.0%
OTHER ORGANICS											
Food	0.6%	13	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Tires	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Rubber	0.2%	4	25.0%	1	0.0%	0	0.0%	0	1	0.0%	0.0%
Wood waste	21.2%	494	0.0%	0	80.0%	395	0.0%	0	395	17.0%	1.0%
Wood	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Ag crop residue	0.0%	0	0.0%	0	40.0%	0	0.0%	0	0	0.0%	0.0%
Manure	0.0%	0	0.0%	0	40.0%	0	0.0%	0	0	0.0%	0.0%
Disposable diapers	0.2%	4	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Textiles, leather	0.4%	10	25.0%	3	0.0%	0	0.0%	0	3	0.1%	0.0%
OTHER WASTES											
Asphalt	0.0%	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%	0.0%
Inert solids	23.1%	538	0.0%	0	0.0%	0	90.0%	484	484	20.8%	1.2%
Composite materials	0.3%	6	25.0%	2	0.0%	0	0.0%	0	2	0.1%	0.0%
HHW material/cont.	1.5%	36	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Misc.	0.1%	3	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
SPECIAL WASTES											
Ash	0.0%	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%	0.0%
Auto shredder	0.0%	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%	0.0%
Bulky waste	0.0%	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%	0.0%
Construction/demol.	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Industrial Waste	100.0%	2332	27.5%	641	17.9%	417	20.8%	484	1543	66.2%	3.8%
Total Waste Stream			1.6%		1.0%		1.2%				

SELF-HAUL WASTE STREAM		2000
Unincorporated Yolo County		
Self-Haul Waste	=	730
Total Waste Stream	=	41,071

Note: For each program, percent is the percent diverted of the waste type.

			BIN TRANSFER FACILITY		SPECIAL WASTE		SUMMARY TOTALS		
WASTE TYPE	% COMP	TONS	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	TTL TONS DIVERTED	Other WASTE	TOTAL WASTE
PAPER									
Newspaper	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Corrugated	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
High-Grade	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Mixed	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Cont. paper	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
PLASTICS									
PET	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
HDPE	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%
PS	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%
Other plastics	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
GLASS									
CA redemption	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other recyclable	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%
METALS									
Aluminum cans	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Bi-metal/tin	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%
Non-ferrous metal	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
White goods	1.6%	12	100.0%	12	0.0%	0	12	1.6%	0.0%
YARD WASTE									
Grass, leaves	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%
Mixed yard waste	1.1%	8	100.0%	8	0.0%	0	8	1.1%	0.0%
OTHER ORGANICS									
Food	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Tires	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Rubber	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Wood waste	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Wood	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%
Manure	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Disposable diapers	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Textiles, leather	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
OTHER WASTES									
Asphalt	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%
Inert solids	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Composite materials	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
HHW material/cont.	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Misc.	36.2%	264	0.0%	0	0.0%	0	0	0.0%	0.0%
SPECIAL WASTES									
Ash	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%
Auto shredder	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%
Bulky waste	1.8%	13	50.0%	7	0.0%	0	7	0.9%	0.0%
Other special	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Construction/demol.	59.5%	434	80.0%	347	0.0%	0	347	47.6%	0.8%
Other Waste	**100.1%**	**731**	**51.2%**	**374**	**0.0%**	**0**	**374**	**51.2%**	**0.9%**
Total Waste Stream			**0.9%**		**0.0%**				

U.C. DAVIS WASTE STREAM	2000
Unincorporated Yolo County	
U.C. Davis Waste	20,404 tons
Total Waste Stream	41,071 tons

Note: For each program, percent is the percent diverted of the U.C. Davis waste stream.

		SOURCE REDUCTION		UCD RECYCLING		UCD COMPOSTING		UCD SPECIAL WASTE		SUMMARY TOTALS		
WASTE TYPE	DISPOSAL % COMP	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	PERCENT	TONS DIVERTED	TTL TONS DIVERTED	UC DAVIS WASTE	TOTAL WASTE
PAPER												
Newspaper	2.6%	0.0%	0	1.6%	331	0.0%	0	0.0%	0	331	1.6%	0.8%
Corrugated	7.1%	0.0%	0	3.9%	795	0.0%	0	0.0%	0	795	3.9%	1.9%
High-Grade	5.6%	2.4%	490	3.0%	608	0.0%	0	0.0%	0	1098	5.4%	2.7%
Mixed	5.4%	0.0%	0	2.1%	434	0.0%	0	0.0%	0	434	2.1%	1.1%
Cont. paper	11.3%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
PLASTICS												
PET	0.1%	0.0%	0	0.0%	5	0.0%	0	0.0%	0	5	0.0%	0.0%
HDPE	0.2%	0.0%	0	0.1%	22	0.0%	0	0.0%	0	22	0.1%	0.1%
Pigmented HDPE	0.5%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
PS	0.3%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Film	2.6%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other plastics	5.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
GLASS												
CA redemption	0.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Other recyclable	0.8%	0.0%	0	1.6%	328	0.0%	0	0.0%	0	328	1.6%	0.8%
Non-recyclable	0.5%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
METALS												
Aluminum cans	0.2%	0.0%	0	0.1%	16	0.0%	0	0.0%	0	16	0.1%	0.0%
Bi-metal/tin	0.8%	0.0%	0	0.9%	174	0.0%	0	0.0%	0	174	0.9%	0.4%
Ferrous metal	0.6%	0.0%	0	0.0%	0	0.0%	0	1.3%	265	265	1.3%	0.6%
Non-ferrous metal	0.2%	0.0%	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	0.0%	0.0%
YARD WASTE												
Grass, leaves	1.2%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Prunings	1.7%	0.0%	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	0.0%	0.0%
OTHER ORGANICS												
Food	3.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Tires	0.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Rubber	1.3%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Wood waste	3.3%	0.0%	0	0.0%	0	3.7%	755	1.4%	286	1041	5.1%	2.5%
Wood	0.1%	0.0%	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	0.0%	0.0%
Manure	20.5%	0.0%	0	0.0%	0	28.2%	5754	0.0%	0	5754	28.2%	14.0%
Disposable diapers	0.9%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Textiles, leather	1.8%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
OTHER WASTES												
Asphalt	0.0%	0.0%	0	0.0%	0	0.0%	0	8.7%	1785	1785	8.7%	4.3%
Concrete	0.0%	0.0%	0	0.0%	0	0.0%	0	8.8%	1786	1786	8.8%	4.3%
Inert solids	3.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Composite materials	0.5%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
HHW material/cont.	0.2%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Misc.	1.5%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
SPECIAL WASTES												
Ash	0.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Medical waste	7.5%	0.0%	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	0.0%	0.0%
Auto bodies	0.0%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
Bulky waste	5.2%	0.3%	61	0.0%	0	0.0%	0	0.0%	0	61	0.3%	0.1%
Other special	0.0%	0.0%	0	0.0%	0	0.0%	0	1.2%	245	245	1.2%	0.6%
Construction/demol.	3.7%	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0.0%
U.C. Davis Waste	**99.2%**	**2.7%**	**551**	**13.3%**	**2716**	**31.9%**	**6509**	**21.4%**	**4367**	**14143**	**69.3%**	**34.4%**
Total Waste Stream		**1.3%**		**6.6%**		**15.8%**		**10.6%**				

APPENDIX D

"GARBAGE TALK" QUARTERLY NEWSLETTER SAMPLES

YOLO COUNTY RECYCLES!

§

GARBAGE TALK...

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A Quarterly Newsletter from Public Works

Jan. - Mar., 1991 292 W. Beamer Street Vol. I, Issue I

ABOUT GARBAGE TALK

Garbage Talk is brought to you by the Yolo County Department of Public Works to promote one simple change of habit...recycling! On January 1, 1990 the California Integrated Waste Management Board was empowered by the California Assembly to enforce Assembly Bill 939, the California Integrated Waste Management Act. In short, Assembly Bill 939 requires that each city or county jurisdiction reduce its solid waste stream 25% by 1995, and 50% by the year 2000. That's a lot of garbage.

What is Integrated Waste Management?

"Integrated Waste Management" is a glorious phrase that actually applies to solid waste or "garbage" management. So whatever you throw in the trash is affected by Assembly Bill 939. This means that we need to focus our efforts on minimizing the amounts of garbage that we generate each day. Waste minimization is also referred as Source Reduction. We can also "Recycle" our garbage to meet the 1995 deadline. All we must do is separate the good garbage, like glass, plastic soda bottles, aluminum cans, and newspaper, from the rest of our garbage. You can then take these items to one of the recycle centers in the County. All four cities in Yolo County have Recycle Centers, just look in the Yellow Pages under "Recycle Centers" for the one nearest you, or refer to the attached list on page 4 of this newsletter.

CURBSIDE RECYCLING IN WOODLAND

According to officials at Woodland Disposal Company and the City of Woodland, a pilot curbside recycling program will begin later this spring. Five hundred homes will be on the curbside recycling routes. Officials say that this pilot program will be used to "concept test" the idea of curbside recycling in Woodland. More information will be in the next issue of Garbage Talk as this program develops.

ESPARTO RECYCLING

To date there are limited opportunities for residents living in Esparto to recycle. However, thanks to Public Works Engineer Linda Allen, recycle bins will be in place at the Esparto Convenience Center by late spring. Linda has been working on this Recycling Project for about a year now - the time required to obtain all the necessary permits. Recycling at the Esparto Convenience Center will be very similar to the recycling area at the Yolo County Central Landfill. Esparto residents will soon have a recycling area where they can voluntarily drop off newspaper, glass, aluminum, and plastic. Keep your eyes peeled!

HOUSEHOLD HAZARDOUS WASTE

The Yolo County Public Works Department is sponsoring two household hazardous waste (HHW) turn-in events this April. Yolo County residents living in or near the Davis area should bring their HHW to Davis Waste Removal, 1818 Fifth Street, from 9:00 a.m. to 2:00 p.m. on Saturday, April 13, 1991. Woodland or northern Yolo County residents should turn in their HHW materials on Saturday April 27, 1991, from 9:00 a.m. to 2:00 p.m., at the southwest parking lot at County Fair Mall. Examples of HHW include waste motor oil, unwanted paint, poisons, pesticides, dirty gasoline, pool chemicals, household cleaners, car batteries, and unspent aerosol cans.

The County Public Works Department has sponsored these events since 1985 to prevent these materials from entering the Yolo County Central Landfill. HHW that enters a landfill is harmful to landfill workers, and may also pollute groundwater. Four HHW events were held in Yolo County last year; almost 24 tons of HHW were turned in. Woodland's HHW event last year attracted 400 customers (up from 105) who turned in nearly six tons of HHW. For more information about Yolo County's HHW Collection Program, contact either the Public Works Department at 666-8775, or the County Environmental Health Department at 666-8646. Whatever you do, don't throw HHW into the trash! Either give unwanted usable materials to a friend or turn it in. It is easy...and free! ***REMEMBER that WASTE OIL and CAR BATTERIES can be RECYCLED at the Yolo County Central Landfill (Telephone: 666-8729).***

WOW PROGRAM UPDATE

Thanks to all the County offices who responded to the WOW Program Survey. The Public Works Department has summarized the questionnaires and is trying to get more storage boxes. All County offices should utilize their waste cardboard boxes as WOW boxes until we receive new ones. Nearly 800 County employees will soon be on the WOW collection routes - our newest collection will be from the Monroe Detention Center. We hope to have this office on our route within a month - so please bear with us!

The WOW Program is collecting more paper than ever. If you have any

questions about the WOW Program, please call Dave Hiatt at the Central Landfill (666-8729). Special thanks to the County Recorder's Office for organizing their WOW boxes for us -it really helps!

RECYCLING RATES - TONS RECOVERED AT THE YCCL

	Jan.	Feb.
Tires	3.98	-
Batteries	1.73	1.23
Oil	3.38	1.97
Glass	4.13	1.02
Aluminum	-	0.37
News	5.93	4.78
WOW	2.03	2.27
Wood	332.61	468.37
Phone Books	1.36	-

TRASH TRIVIA

* Decomposition times for commonly littered objects.

Aluminum	80 - 100 years
Glass Bottles	1,000,000 years
Plastic Bags	10 - 20 years
Wool Clothing	1 - 5 years
Cigarette Butts	1 - 5 years

* Source: California Integrated Waste Management Board.

AB 939 RECYCLING PUBLIC FORUMS

On March 12, the Public Works Department sponsored and presented a two hour public forum in the Woodland City Council Chambers to educate Woodland residents about California's new recycling laws. Unfortunately, due to limited advertising and rainy weather, only a handful of city residents participated in the forum. Evan Edgar, Senior Civil Engineer, led the discussion and introduced to the audience the reasons why solid waste management is getting so much attention. In 1989 approximately 275,000 tons of garbage was buried in the Yolo County Central Landfill. Last year nearly 265,000 tons of garbage was buried, about 35 percent of it from Sacramento County. In 1989, Yolo County recycled roughly 12 percent of its garbage (this includes Davis' curbside recycling program). So we have a long way to go to achieve 25 percent solid waste reduction by 1995.

Two representatives from Brown, Vence and Associates, a San Francisco based consulting firm, then presented a slide show on the waste management alternatives available to Yolo County. Some of the alternatives included the curbside collection of recyclable materials and also possibly building a materials recovery facility that separates all the recyclable materials for baling and shipping to end markets.

Tim Magill of Woodland Disposal Company and Sherri Martin of the Woodland Public Works Department then discussed Woodland's Pilot Curbside Recycling Program to begin on April 1, 1991. A short discussion followed regarding Yolo County's ability to market recyclable materials. Much of Yolo County's recyclable garbage (cans, waste paper, glass) will be sent to brokers in the Central Valley or Bay Area. More on "garbage markets" in upcoming editions of Garbage Talk.

The Public Works Department more recenty held an AB 939 public forum in the West Sacramento City Council Chambers on March 19, 1991. Special thanks to Denise Kotko, City of West Sacramento, Tim Magill, East Yolo Waste Disposal Company, and Marcus Davenport, Central Landfill, for their input and assistance. We're slowly getting the word out!

UPCOMING RECYCLING FORUMS

The next AB 939 Recycling Public Forum will be held on Wednesday evening, April 3rd, at the Esparto Senior Center from 7:00 p.m. to 9:00 p.m.. This forum is open to anyone interested in learning more about garbage. Additional public forums for Davis, Winters and other rural Yolo County areas are planned but not yet scheduled. All forums will be announced in the local newspapers.

YOLO COUNTY PARKS RECYCLING

Recycling bins will hopefully be in place at three Yolo County Parks. A pilot recycling program to recover glass and aluminum beverage containers may be ready for the summer season. Would be recyclers can voluntarily drop off their empty containers into modified 55 gallon drums. The County Parks Division will provide the collection and maintenance services for these recycle bins. Fishermen, boaters, and picnickers are encouraged to recycle at these Parks: The Knights Landing and Elkhorn Boat Launches, and Cache Creek Canyon Park. The Public Works Department appreciates the Parks Division for supporting this program.

STEEL CAN RECYCLING

Davis Waste Removal now recovers empty steel cans during its weekly curbside collection program. Just rinse those empty tuna, vegetable, and soup cans and put them with the rest of your recyclable materials. The Yolo County Central Landfill will also begin steel can recycling at the voluntary recycle center. We're working on getting bins!

RECYCLED PRODUCTS

Last June of 1990, the County Board of Supervisors passed Resolution No. 90-82 to implement guidelines for the County's procurement policy for recycled products. Janice Ehrke, Manager of the County's Purchasing Services Division, was the primary author of this Resolution which specifies that the County purchase products manufactured from recycled materials if they meet or exceed the quality of products made from virgin materials. An example of this is recycled paper. By 1993, the County's goal is to purchase 30% of its office paper that originates from recycled fibers, and 50% by 1995. Ehrke's greatest frustration for buying reams of recycled paper is that these products are more expensive than paper made from virgin pulp. Other problems associated with recycled paper are that it jams photocopying and FAX machines. The purpose of Resolution No. 90-82 is to stimulate and facilitate the demand for recyclable commodities.

The Purchasing Services Division has taken a pro-active stance on recycling. Ehrke recently organized a Recycled Products Procurement Workshop which was attended by procurement officers from Davis, Sacramento, Woodland, Fairfield, and neighboring Counties. Ehrke is striving to develop cooperative buying power and possibly joint purchases that addresses multi-agency needs. For more information contact Janice Ehrke at 666-8070.

RECYCLING IN THE CAO'S OFFICE

Along with the WOW paper pick-ups, more opportunities exist to recycle materials generated in the CAO's office. Keith Ott, Director of the County's General Services Agency, offered to supply the downstairs break room with one of his own plastic garbage pails to recycle aluminum cans. These items can be turned in for cash at one of Woodland's local 20/20 Recycle Centers (60 - 80¢ per pound for aluminum). The Public Works Department will look into supplying recycling pails for the CAO's office, but it may actually be cheaper if each department purchased their own 30 gallon trash can from a local hardware store. If you have ideas or suggestions on good locations to set recycling containers, contact either the Public Works Department or start a program on your own!

NEW HIRES AT PUBLIC WORKS

Recent hires of the Public Works Department's Sanitation Enterprise bring to Yolo County a great deal of experience and enthusiasm for managing the County's solid waste stream.

Tamara Bowcutt, Assistant Director, joined Yolo County in August of 1990, and formerly worked as an engineer with CalTrans for 7 years. She's off the highways and into garbage! Evan Edgar, a Senior Civil Engineer hired in December, comes to Yolo County after 7 years of managing Kern County's 14 landfills. Both Tamara and Evan are Registered Civil Engineers in California, and are the County's leaders for AB 939 planning. Assistant Civil Engineer, Ramin Yazdani, is an alumnus of UC Davis and worked with the U.S. Soil Conservation Service before joining the County last March. Ramin brings to us technical expertise in designing the new "cell" at the Yolo County Central Landfill.

Associate Hydrogeologist, Tom Mohr, is in charge of some of the environmental monitoring programs at the Central Landfill. Tom has previous work experience with the Peace Corps and private consulting, and joined the County back in August of 1988. Tom is the County's groundwater expert. County veterans, John Smith and Leah Fulton, were hired last summer as Solid Waste Technicians and assist with the landfill's environmental monitoring and load checking programs.

Eric Miller initially joined the County Public Works Department in May of 1989, and was hired as the County's Waste Reduction/Recycling Coordinator last October. Eric previously worked with the U.S. Forest Service, and as a chemist for the Las Virgenes Municipal Water District in southern California. Eric's duties include coordinating Yolo County's recycling and household hazardous waste collection programs.

Dave Hiatt and Kent Williams were hired within the past year and work at the Central Landfill's scalehouse. Both Dave and Kent assist with the WOW pick-ups and voluntary recycle center.

Also providing invaluable assistance to the Public Works Department are UC Davis graduate student engineers Rick Moore and Linda Allen. Linda and Rick provide additional support with regards to recycling and landfill engineering.

Jo Ann Larson, Administrative Clerk, rounds out Yolo County's "AB 939 Team". Jo Ann handles all administrative correspondence, and very graciously prepared Garbage Talk.

These County employees are some of the "behind the scene" people that will help implement AB 939. We all welcome your suggestions and ideas for recycling in Yolo County.

[GARBAGE TALK FEEDBACK]

Please let us know how you feel about this quarterly newsletter. Send all Fan Mail or Hate Mail to Eric Miller, Yolo County Public Works, 292 W. Beamer Street, Woodland, CA 95695 (or Courier No. 26). If you have any questions regarding garbage or information you would like to share, contact either Evan Edgar or Eric Miller at 666-8775. We will talk trash with you.

P.S. Send news articles too!

YOLO COUNTY RECYCLES!

EXISTING RECYCLE CENTERS IN YOLO COUNTY

Location	Address	Items Recovered
Davis	20/20 Recycle/Lucky, 1900 Anderson Road 20/20 Recycle/Safeway, 1414 Covell Blvd. 20/20 Recycle/Safeway, 871 Russell Blvd. Davis Waste Removal, 1818 Fifth street	CA redemption containers CA redemption containers, paper, waste oil
UC Davis	ASUCD Project Recycle, UC Davis Campus	Aluminum, glass, plastic beverage containers, paper
West Sacramento	Sac-Val.Raley's, 1601 W. Capitol Ave. 20/20 Recycle/Safeway, 1298 W. Capitol Ave. Jim's Redemption Center, 3130 Duluth St. Capitol Coors Co., 2424 Del Monte Street	CA redemption containers
Winters	Vacaville Sanitary Service/Winters Recycling 18 East Baker Street Town and County Market, 121 E. Grant Avenue	CA redemption containers, newspaper glass aluminum
Woodland	Reynolds Aluminum/Raley's, 367 W. Main St. 20/20 Recycle/Compton's Market, 1349 College Nugget Market, 157 Main Street Woodland Rehabilitation & Equipment Industries, Inc., 660 6th Street	Aluminum CA redemption containers
YCCL	County Road 28H at County Road 104	Glass, paper, PET, PVC, scrap metal, auto batteries, waste oil, wood waste, aluminum

* Save this page for future reference *

YOLO COUNTY RECYCLES!

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GARBAGE TALK...

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A Quarterly Newsletter from Public Works

April - June, 1991 292 W. Beamer Street Vol. I, Issue II

TRASH TIME AGAIN

This second edition of Garbage Talk brings you more information than you ever wanted to know about Yolo County's garbage. We in Public Works appreciate the positive feedback received for our premier edition. As we inform you about future and existing recycling programs in our cities and County, we will try our best to address your needs.

GARBAGE PRO'S SORT THROUGH COUNTY'S TRASH

During a three week period in April, EBA Wastechnologies, one of the County's recycling consultants, spent long days sorting through our garbage at the Central Landfill. Over 240 private and commercial loads of garbage were sorted. These include garbage trucks and self-haul loads that originated from Davis, West Sacramento, Winters, Woodland, and the unincorporated areas of Yolo County. Seven loads were also sorted at the UC Davis landfill.

Yolo County and the four cities hired EBA to conduct this "waste characterization" to give us an idea of the percentages of paper, cardboard, plastic, wood, metals, glass, yard waste, and food that is thrown away. Once we learn the volumes and types of wastes in our garbage, the County and cities can devise and implement large scale recycling plans to recover and market these commodities to local brokers.

Weird Trash Findings

To sort the waste, EBA pulled 200 pound samples of garbage from each truck. Five person crews then categorized and weighed each waste stream. The final results are not yet in but here are a few interesting weird trash facts:

- One Winters load consisted of nearly 5 percent disposable diapers!

- We found some love letters!

- Food was the most disgusting item to sort and weigh. The worst was old cottage cheese and raw chicken, yuck!

- We found and returned a $1,000 check to a man living in Winters. It was accidently thrown away!

- Someone threw away some risque lingerie...

- The total cost of this massive "garbage sort" was $18,000.

We will publish the results of the waste characterization when the data are finally tallied.

YOLO COUNTY RECYCLES WOOD

Early in 1990, the County of Yolo and Valley By-Products, a wood recycler based in Fresno, entered into agreement to separate and recover wood waste that was entering the Central Landfill. A public-private joint venture, Valley By-Products leases 15 acres at the Central Landfill and accepts clean loads of wood including tree brush and prunings, boxes and pallets, clean construction wood waste and clean demolition wood waste. Valley By-Products recovered approximately 7,000 tons of wood waste in 1990, or roughly 2.5 percent of the waste stream entering the Central Landfill.

Entrepreneurial Leadership

Valley By-Products was founded in 1988 by James Tischer, formerly a consultant in the biomass power plant industry. As a consultant, Tischer located fuel wood sources and secured contracts between wood producers and biomass power plants. Those fuel wood sources would consist of anything from tree cuttings to construction demolition. Tischer quickly found that there was insufficient available fuel to meet the needs of the biomass plants. And yet, he was aware that thousands of tons of reclaimable wood were being disposed of in local landfills. While Valley By-Products diverts wood and yard waste, the county benefits by earning waste diversion credit and complies with State regulations. Tischer markets his processed wood as fuel wood to Woodland Biomass, a wood fired electrical power plant in Woodland.

Needs More Wood

Valley By-Products' first year of

operations was successful but more wood is needed! So spread the word about wood recycling in Yolo County. Remember that only clean wood is acceptable - pressure treated wood, railroad ties, leaves, palm fronds, or stumps are not accepted. Valley By-Products is open Monday through Friday from 6:30 to 4:00. For more information on recycling fees or wood quality, call Valley By-Products at 662-5341.

DISPOSABLE DIAPER DILEMMA

Disposable diapers have been found to account for approximately 2% of the garbage currently landfilled in California. The figure is approximately the same nationwide. For Yolo County this translates to over 5000 tons per year This is a lot of diapers!!! This issue has received a great deal of media attention as people are becoming more aware of the need to "Reduce, Reuse, and Recycle." During the 1990 legislative session, more than 20 states introduced legislation and supported education efforts to reduce the use of disposable diapers, and to encourage the use of cotton diapers whenever possible. Legislation, whether pending or passed, took the form of outright bans on disposable diapers or a system of taxation that would help to incorporate the true costs of disposing single use diapers at our landfills.

Biodegradable or Not?

To confound the emotional and politically sensitive issue of disposable diapers, manufacturers are now marketing these diapers as being "biodegradable." These biodegradable diapers, marketed to environmentally conscious parents, are composed of a mixture of cornstarch based resin and plastic. Manufacturers claim that landfill bacteria and fungi will actually assist in the breakdown of these components.

But, an argument against these biodegradable diapers, is that an optimal environment is required before these diapers can decompose. Bacteria work best when there is ample sunlight, moisture, and oxygen. Because garbage is buried, these factors no longer provide a strong environment for bacteria to decompose. Rather than decomposing diapers, we have "buried diapers."

Unlike single use diapers, cloth diapers can be used 100-200 times, and then made into rags when utility as a diaper is worn out. The cloth diaper that exists today is different from that of yesterday. No longer do they come with leaky plastic pants and pins. They now come with nylon covers, velcro fasteners, and fit snugly to prevent leakage. Diaper companies provide customers with diapers, a deodorized diaper pail, and once a week pick up. They have made many improvements over the years to make diapering with cloth as convenient as diapering with disposable diapers. However, the issue of water usage must also be taken into account when considering reusable diapers. A number of comparitive studies have been conducted concerning water usage with single use and reusable diapers. It has been found that home laundered diapers use significantly more water than either single use or commercially laundered reusables. In a drought stricken state such as California, these issues must be taken into account when considering whether to use disposables or cloth diapers.

We called 5 infant care centers in Yolo County to see if any of them used cloth diapers. It was discovered that most of the services never have. All centers require that parents provide their own diapers. Only one of the five centers allows the parents the choice of bringing either cloth or single use diapers, while the rest mandate that parents bring disposable diapers. When asked whether they'd be willing to try a diaper service, most centers were not enthusiastic, claiming that cloth diapers would be less convenient, and more of a health hazard than single use diapers. In addition, they felt that parents would be unwilling to incorporate the cost of a diaper service into existing fees. If you would like to know more about this survey, contact Linda Kaplan, Recycling Intern, at Public Works (666-8775).

TEXTILE RECYCLING IN WEST SACRAMENTO

The Sacramento Mill Supply hauls approximately 22 tons of scrap textiles per week to the Yolo County Central Landfill (YCCL). Upon inquiry as to whether there were any alternatives to dumping the scrap textiles, it was discovered that the company themselves recycles clothing. They take what is rejected by Goodwill/Salvation Army stores, in addition to buying from private individuals, and ship what they can to third world countries. The clothing that is not worth shipping is manufactured into carpets and rags. There are no buyers for the residual scrap textiles Sacramento Mill Supply brings to the landfill.

Sacramento Mill Supply purchases unwanted scrap textiles from the public and are particularly interested in cotton clothing. They offer up to 6 cents per pound for good usable scrap textiles. You can bring your unneeded clothing to 31 15th street in West Sacramento Monday thru Friday between 7am-3pm. If you have any further questions, you might want to call them at 371-0746.

TRASH TRIVIA

- "Squeezable" plastic ketchup bottles are easy to use, but difficult to recycle. Most of them are made of several layers of different kinds of plastic (up to 5 layers)--which means they are unrecyclable with current technology.

- Here's a fashion statement: 26 recyclable plastic soda bottles can be made into one polyester suit!!

A LOOK AT THE STEEL MARKET

Steel cans are common household items that are easy to collect, inexpensive to process, and have stable, well established markets. Steel cans that are recycled today will be made into new products tomorrow: food and beverage containers, general purpose cans, cars, construction materials, and toys.

Currently, major food companies such as Dole, Hormel, Del Monte, and Stokely are all taking part in programs to further the recycling of steel. Dole, Hormel and Stokely are putting the steel recycling logo on steel can labels containing its products. By doing this, they hope to raise consumer's recycling awareness. With a visible logo on the can, consumers will recognize that the item is recyclable and take the necessary steps towards recycling. The companies are confident that the recycling logo on

the can will help to divert a great deal of steel from our nation's landfills. In Northern California, recovered steel cans are bought by a broker near Stockton. The going rate is $50 per ton for baled steel cans. Some of these commodities are transported to mines near Salt Lake City, Utah, to be used in the copper smelting process for extracting copper.

According to the U.S. Steel Can Recycling Institute, 100 million tons of steel were produced in the USA in 1989-90; 66 million tons originated from remelted scrap. Raw virgin materials for steel products include coal, limestone, and iron ore mining operations throughout the USA.

Steel Recycling in Yolo County

Steel can recycling bins are now located at the Central Landfill and also the Esparto Convenience Center. The best way to recycle your steel cans are to rinse the containers with dirty dishwater (to conserve water) and flatten the cans if possible. Clean cans will not cause odors or attract insects. Don't worry about removing paper labels, our brokers will accept steel cans as they are. For more information about steel can recycling contact Eric Miller at Public Works at 666-8775 or Davis Waste Removal at 756-4646.

ESPARTO RECYCLING

On June 19th, recycling officially began at the Esparto Convenience Center Transfer Station. Residents of Esparto and the Capay Valley now have an opportunity to voluntarily recycle newspaper, steel cans, aluminum, plastic soda bottles and milk jugs, and glass.

The ribbon cutting ceremony, attended by Supervisor Cowles Mast, County officials and community leaders, capped a two year planning effort to design and permit the recycling facility. The recycling services are provided free of charge, and the Public Works Department is seeking to install a battery recycling bin and waste oil collection tank in the near future.

The Esparto Convenience Center is open from 9:30 to 5:00 on Wednesdays, Saturdays and Sundays. For further information call either 787-3387 or 666-8729.

AB 939 RECYCLING FORUMS

Three Recycling Public Forums were held recently in the County. Garbage crusaders Evan Edgar and Eric Miller presented the forums to Esparto and Winters residents and UC Davis officials.

Additional AB 939 Recycling Forums will be held as recycling planning matures in Yolo County. Special thanks to Jane Maurer, Esparto, Amelia Hutchinson, City of Winters, and Roberta Koehler, UC Davis, for their assistance in coordinating these forums.

RECYCLING RATES - TONS RECOVERED AT THE YCCL

	1st Qtr	2nd Qtr
Tires	17.31	18.76
Batteries	4.11	7.41
Oil	6.54	12.78
Glass	6.30	0.82
Aluminum	0.37	0.19
News	16.84	9.97
WOW	7.22	9.20
Wood	1377	2130
PVC	-	1.50

WOW PROGRAM BREAKS RECORDS!

Yolo County offices have really taken white office wastepaper (WOW) recycling to heart. Public Works originally targeted to recycle 20 tons of WOW paper this year...looks like we'll easily meet this goal. The WOW paper collection program recycled nearly 5 tons of paper during April. So congratulations to all you office environmentalists, keep the WOW program going strong. The WOW program is intended solely for County offices; contact Dave Hiatt at the Central Landfill (666-8729) if you wish to join the program or need WOW boxes. We hope to have official WOW storage bags in a few months so bear with us.

HOUSEHOLD HAZARDOUS WASTE

Two household hazardous waste (HHW) collection events were recently held in Yolo County: one in Davis, and the other in Woodland. Nearly 630 county residents participated in the events by turning in unwanted paint, used oil or household cleaners. A total of 1200 gallons of waste motor oil, 108 auto batteries, 550 gallons of latex paint, and 30 gallons of antifreeze were recycled. A SWAP table was set up at the Woodland event where paint, motor oil, and cleaners could be taken and reused. Total cost for both events was around $45,000. The public's acceptance for this program is growing; the County hopes to organize 5 HHW collection events for fiscal year 1991-1992. More information on HHW in the next issue of Garbage Talk.

DAVIS RECYCLES 25%

Congratulations to the City of Davis for being the first Yolo County city to recycle 25% of its garbage! Davis Waste Removal's progressive curbside recycling program, and the City's aggressive planning and implementation schedule, have made Davis a model city for other jurisdictions to study. Davis' recycling campaigns and strategies will be profiled in future editions of Garbage Talk. If you live in Davis and desire additional information contact the City of Davis at 757-5686.

PLASTICS RECYCLING

Plastic recycling bins are now located at the Central Landfill and Esparto Convenience Center. Only soda bottles and clear milk jugs are marketable and recyclable at this time so please separate these beverage containers for recycling. The Plastics Manufacturing Industry has recently devised a simple way to identify the different types of plastics. For plastic recycling codes refer to page 4 of Garbage Talk.

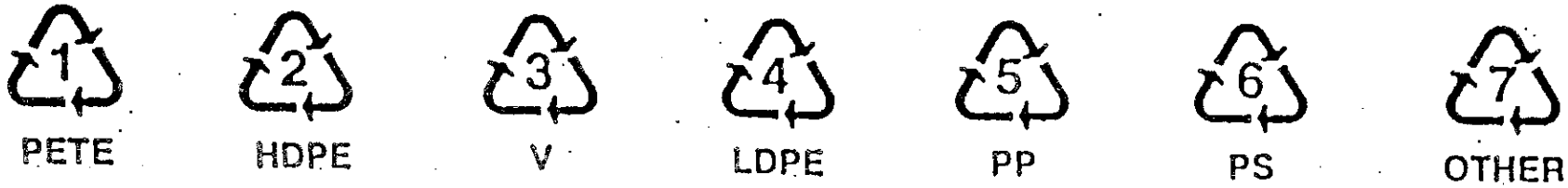
GARBAGE TALK FEEDBACK

Thanks again for your encouraging feedback on Garbage Talk. Your comments or criticism can be sent to Eric Miller, Yolo County Public Works, 292 W. Beamer St.,Woodland, CA, 95695 (or Courier no. 26). Or call....666-8775. Remember, we'll talk trash with you!!!

RECYCLE YOUR COPY OF GARBAGE TALK

PLASTIC CONTAINER RECYCLING CODES
(printed on underside of container)

SOCIETY OF THE PLASTICS INDUSTRY (SPI)
VOLUNTARY PLASTIC CONTAINER CODING SYSTEM



CODE	MARKET PRICE
1 = PET, such as 2 liter soda bottles, peanut butter containers	30cents/lb.
2 = HDPE, milk jugs	7cents/lb.
3 = PVC, clear water bottles, plastic plumbing or irrigation pipe	2-8cents/lb.
4 = LDPE, plastic such as trash and sandwich bags, other film plastics	0cents/lb.
5 = PP, includes plastic tubs for packaging salsa	0cents/lb.
6 = PS, includes "styrofoam type containers," cafeteria trays, yogurt tubs	0cents/lb.
7 = OTHER, plastics like ketchup bottles (5 layers) or shampoo bottles (3 layers)	0cents/lb.

YOLO COUNTY RECYCLES!

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GARBAGE TALK...

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A Quarterly Newsletter from Public Works

July - Sept., 1991 | 292 W. Beamer Street | Vol. I, Issue 3

MORE GARBAGE TALK

Here's to a third edition of Garbage Talk, the newsletter that informs you of the latest and greatest happenings about Yolo County's garbage. Lots has occurred in the County with regards to recycling. New programs are developing, and public support is high. As garbage managers, we in Public Works are committed to achieving the State's waste diversion goals of reducing the garbage buried in the Yolo County Central Landfill 25% by 1995 and 50% by 2000. And we need your support. So read on, hope you enjoy this edition of Garbage Talk.

P.S. If you want to talk trash, call Eric Miller or Evan Edgar at Public Works (666-8775).

GO CLARKSBURG!!

The community of Clarksburg, located in the unincorporated southeastern part of Yolo County, has taken the task of recycling into their own hands with a program called CLARKSBURG RECYCLES. The project seeks to recover and recycle aluminum, glass and plastic bottles via a program involving curbside pick up and central drop off. Approximately 100 homes will be serviced in the curbside collection program.

With the idea originally conceived by residents Michael and Michelle Campbell, CLARKSBURG RECYCLES is a non-profit citizens group started by civic leaders who recognized the need for a curbside collection program. Currently, Clarksburg citizens who recycle are required to drive into Sacramento to the nearest recycling facility. An informal survey conducted by founders of the project indicated that people want to recycle, but find it inconvenient to do so. The goal of the project is to enlist maximum community participation in recycling via a convenient system of collection. Once the materials are recovered, they will be sorted and taken to markets CLARKSBURG RECYCLES has established for the recyclable commodities.

Grant Money

CLARKSBURG RECYCLES has already applied for and acquired from the State Department of Conservation, Division of Recycling, a $5000 grant to cover initial cash outlay for capital expenditures. The project recently received recognition from the Yolo County Board of Supervisors. Implementation of the program will occur in early November.

Programs like CLARKSBURG RECYCLES are instrumental in helping Yolo County reach the goals set forth in the 1989 California Integrated Waste Management Act which mandates that cities and counties divert solid waste buried in landfills 25% by 1995 and 50% by 2000. This project not only encourages small communities to take recycling efforts into their own hands, but it also helps Yolo County in earning waste diversion credit for the unincorporated area of Yolo County. It is encouraging to see a community working together in the name of recycling. We greatly appreciate all efforts being made by Yolo County residents to help us meet the new recycling laws. Hats off to Michael and Michelle Campbell for their efforts. Go Clarksburg!!!!

RECYCLE THOSE PEANUTS

"Peanuts," or expanded polystyrene shaped like peanuts used for loosefill packing, can be reused! Some ideas for your unwanted peanuts include filling cushions or throw pillows with them, or to save them for re-use in packaging.

What You Can Do

Those who prefer not to re-use the peanuts can take them to any one of the 1500 outlets of Mail Boxes Etc.. Since July 1st, 1991 this postal/packaging franchise has joined with Plastic Loosefill Producers Council to make it easier to return peanuts to be re-used or recycled. The Mail Box Etc. in Woodland is located in the County Fair Mall at 1296 East Gibson. The chain also has a store in the MarketPlace Mall in Davis at 1411 West Covell. Just bring your peanuts to them, and they'll be happy to re-use them!!

CENTRAL LANDFILL OPENS MODULE "A"

Who ever said that Friday the 13th was a day for disaster? This superstition did not hold true at the Module A opening event at the Yolo County Central Landfill on Friday, September 13th, 1991. Module A is a 22 acre, state-of-the-art landfill cell in which Yolo County's garbage will be buried until it

READ IT, PASS IT ON, THEN WOW IT

fills in November 1993. Module A, which has been under construction for the past year, cost approximately $2 million to design and construct. Compared to the $854,000 the county paid for the entire landfill site back in 1974, Module A is the most costly garbage disposal pit in the history of the Yolo County Central Landfill!

An Engineering Success

Module A is deserving of celebration as it is unique in structure. The landfill cell is composed of four layers, each of which serve to protect groundwater quality and make the cell an environmentally safe place in which to dispose trash. Lined with sheets made of synthetic fiber, the module has a leachate collection and removal system which acts to remove leachate so that it does not contaminate groundwater. The module is also designed to measure temperature and moisture levels within the piles of garbage as well as the amount of strain the garbage puts on the liner. These technical features are important in figuring what further improvements can be made in landfill technology. Ramin Yazdani, the Public Works design and on-site engineer for Module A, gave a brief description of the new liner to people who turned up to celebrate the opening of the new module.

A Gala Event

Approximately 50 people, including Supervisors Betsy Marchand and Helen Thomson, as well as County Administrative Officer Donna Landeros, were present at the opening event. A great deal of praise was given to Module A for being completed on time, on budget, and without claims! Just in case you ever wondered where your trash was going once it was picked up by the disposal companies, it's going to a very expensive, environmentally safe, state-of-the-art landfill module. Now County engineers are preparing for the next engineering challenge, Module B. Hopefully we'll never need a Module Z.

A WORM FACTORY?

In an attempt to find an ecologically correct way to dispose of waste, Petaluma may wind up with a worm factory, where millions of worms would devour waste products normally transported to landfills.

Waste Tek Conversion Corp. of Seattle has asked Petaluma officials whether it can build the $500,000 factory in which waste products--including treated sewage sludge, would be heated, and then placed on a conveyor belt for consumption by hungry worms. Backyard composting using worms has been around for centuries. To have a factory of worms helping us to compost, may just be one of the solutions for solving our state's garbage crisis.
Source: Sacramento Bee 9/11/91

Editor's note: Worm factory entrepeneurs might market their worms as live bait...cut the worms in half and double your profits. Invest in worms today! (Check with your investment broker first.)

WOW PROGRAM SHINES!

The Yolo County white-office-waste paper (WOW) recycling program has really taken off. From January to September, our WOW collection crews recovered 25.6 tons of WOW paper. Our initial WOW collection goal for 1991 was to recover 20 tons, looks like we'll make nearly 35 tons this year.

Cash Back Or Not?

For those of you questioning this program and desiring refund money for contributing your office's WOW paper, let us provide you this insight. Market prices for our WOW paper have ranged from $10 to $120 per ton since January. We predict that October's market value will yield us somewhere around $20 to $30 per ton. Hypothetically speaking, at the market price of $120 per ton, each pound of WOW paper is worth about 6 cents. If your office generates 40 lbs of WOW each week, you would earn a gross value of $2.40. At the market price of $30 per ton, your weekly gross value would be no more than 60 cents per week. So there's absolutely no way we can reimburse you for the value of your WOW paper. All revenues earned from this program are reinvested into the program to help defray the costs of fuel, WOW bags, and staff time.

If you are interested in joining the County's WOW program, please contact Dave Hiatt at the Central Landfill. He can be reached at 666-8729 (sorry, we can only service County offices).

GARBAGE SORT RESULTS

You may recall that last spring the County and its four cities teamed up to pay for a $18,000 massive garbage sort that was held at the Central Landfill. Crews sampled over 240 private and commercial loads of garbage. From each 200 pound sample, crews sorted and weighed the percentages of food, paper, aluminum, steel cans, plastic, rubber, textiles, yard waste, wood and glass that is actually buried in the Central Landfill. Another factor to discover was the total amount of garbage generated by each city.

Summary

A breakdown of the garbage generated by each city and each city's existing recycling rates is shown below:

City	lb-person per day	% garbage recycled
Davis	6.2	33.1%
W.S.	9.7	12.8
Woodland	9.5	8.5
Winters	5.9	6.0
County	4.7	23.2*
TOTAL COUNTY	3.1	17.8%

* Includes UC Davis

Overall we're not doing so bad. Once the Cities of Woodland and West Sacramento develop their curbside recycling programs, we can expect recycling percentages to increase. One key result of this garbage sort was the amount of garbage generated by each person per day. Residents of West Sacramento and Woodland lead the pack by generating nearly 10 lbs of garbage per person each day. So expect these cities to develop a thorough source reduction educational campaign.

Editor's note: These figures do not include the generation and recycling of asphalt or concrete from our roadways.

TRASH TRIVIA - OIL RECYCLING

The U.S. E.P.A Office of Solid Waste has some oil facts for us: only 5% of the used oil generated by people who change their own automotive oil is taken to local gas stations or collection centers for recycling. Most of the oil we generate is illegally poured onto the ground (61%) or discarded as trash (30%). For a list of oil recyclers in Yolo County call 666-8775. Remember that the Yolo County Central Landfill has a 1000 gallon waste oil collection tank. There's a limit though: by California law only 5 gallons of liquid can lawfully be transported in your vehicle per trip. Keep that in mind....

Other New California Laws

Passed: California law prohibits the commercial disposal of used oil filters in sanitary landfills. That's our landfill folks.

Proposed: The California Assembly is pushing to consider empty aerosol containers as being a hazardous waste. They're bad for the ozone layer and supposedly everything else. The solution here is to use pump sprays whenever feasible. You can bet Procter & Gamble, Johnson & Johnson, Clorox and other corporate giants are following this one...

The Solution

Either use up all your aerosol cans, be it hairspray, spray paint or household cleanser. Until you hear otherwise, empty aerosol cans may be discarded in the regular garbage. If you must discard partially full aerosol containers, please don't discard them in your garbage. Take them to one of Yolo County's Household Hazardous Waste Collection Day Events.

Proposed: The U.S. E.P.A is currently reviewing whether or not spent fluorescent light bulbs should be considered a hazardous waste. Minnesota, Florida, and Utah no longer accept fluorescent lamps in sanitary landfills. The crushed components often contain residual cadmium, antimony, and mercury. A California recycler in Hayward will take these fluorescent lamps and recycle the glass into wine bottles. When manufactured into wine bottles, the residual components are rendered inert. They charge six cents per lamp foot. Officials at General Electric, Sylvania, and the Phillips Company are lobbying against the regulation of spent fluorescent lamps. Hmmm.....

HOUSEHOLD HAZARDOUS WASTE

The City of West Sacramento recently cosponsored with Yolo County its third household hazardous waste (HHW) collection event. This event was held on Saturday, September 28th and attracted 202 customers. Customers brought in latex paint, aerosol cans, motor oil, antifreeze, pesticides, pool chemicals, used oil filters and other taboo materials that don't belong in our garbage cans.

What We Recycled

This event, smaller than last year's 353 customer turn-out, resulted in the recovery of the following items all of which were sent for recycling:

550 gallons of waste motor oil
440 gallons of latex paint
25 auto batteries

The remainder of the HHW materials collected were sent to hazardous waste landfills or incinerators in Idaho, Texas, and California. A final note: the disposal cost of one 16 ounce aerosol container is $3.00.

Davis will sponsor a HHW collection event on October 12, 1991. Results will follow in the next issue of Garbage Talk.

WOODLAND GOES CURBSIDE

October 1, 1991 marked a historical date for Woodlanders as the City began its inaugural curbside recycling program. Woodland has become one of 270 California cities in the past four years to plan, develop, and implement a curbside recycling program.

Critics Complain

While many Woodland residents support the program, a few vocal opponents against this program frustrate City officials. It is unfortunate that these individuals complain about a program that is so positive for the community and our environmental resources. Granted, a one dollar surcharge to fund this recycling service is difficult to comprehend, but the truth regarding this recycling program is that neither the City nor the garbage hauler is getting rich from recycling. Bulky plastic milk jugs have a scrap value of only a few pennies per pound, and empty steel cans might yield a nickel per pound if we're lucky. Newspaper actually represents a negative cash flow since its scrap value is way below its hauling costs to markets. Glass would be another recycling culprit if it wasn't for the California redemption value program (where we, as consumers, actually pay an extra two cents per bottle at the counter to cover recycling costs). The most valuable commodity of course is aluminum, but then who is willing to "give away" their aluminum cans when you can receive over 60 cents per pound at a local 20/20 recycling center?

Bear With Us

We ask the recycling critics to bear with us. The City faces a $10,000 per day fine from the State if satisfactory recycling progress is not reached by 1995. That is the hammer driving our cities to recycle, and that is the force necessary to assure our natural resources are protected for generations to come.

What Others Pay

According to the 1990 Report on Curbside Recycling compiled by the California Department of Conservation, Division of Recycling, the monthly charges assessed to these households are as follows:

City	Charge per household
South Pasadena	$1.65
Orange	$1.50
Los Altos	$2.00
Petaluma	$1.00
Davis	$1.14

Woodlanders will be charged $1.00 per household per month for curbside collection of recyclables.

MORE TRASH TRIVIA

The Pennsylvania Resources Council, a non profit group dedicated to educating Americans about environmentally sound shopping habits has a toll free line available for answering consumer questions. Call them if you've got questions at 800-468-6772.

DID YOU KNOW....

- 36 two liter plastic soft drink bottles can be recycled into enough fiberfill to make 1 sleeping bag.

RECYCLING RATES AT YCCL AND ESPARTO (tons)

	1st Qtr	2nd Qtr	3rd Qtr
Batteries	4.11	7.41	6.77
Oil	6.54	12.78	8.71
Glass	6.30	0.82	5.13
Aluminum	0.37	0.19	1.82
News	16.84	9.97	10.60
WOW	7.22	9.20	9.17
Wood	1377.	2130	2431.*
PVC	-	1.50	1.07
Steel Cans	-	-	.30

*Does not include figure for September.

GARBAGE TALK FEEDBACK

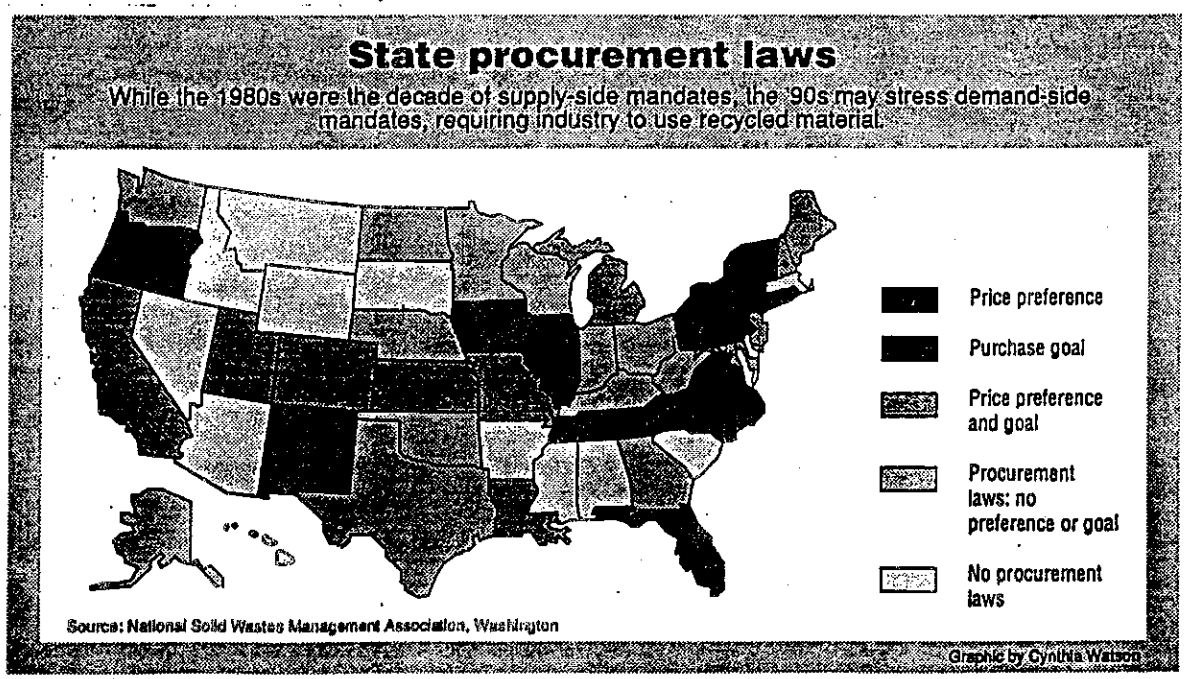
We love feedback on Garbage Talk. Your comments can be sent to Eric Miller, Yolo County Public Works, 292 W. Beamer Street, Woodland, CA 95695 (or Courier #26), or call 666-8775!

RECYCLING
The National Scene

So you think California has progressive recycling laws? Well, we do, but we haven't really invented the "recycling wheel". According to the National Solid Wastes Management Association, 33 of our 50 states already have comprehensive recycling laws. Recycling laws in Oregon and Washington are much tougher than California's AB 939; residents in those states are required to reduce their garbage buried in landfills by as much as 70%.

The figure below shows which states have imposed procurement laws for recycled products.

Yolo County passed its own procurement resolution (Resolution No. 90-82) last year; by 1993 the County's goal is to purchase 30% of its office paper that originates from recycled fibers, and 50% by 1995. For more information about purchasing recycled content products call Janice Ehrke at 666-8070.



READ IT, PASS IT ON, THEN WOW IT

YOLO COUNTY RECYCLES!

§

GARBAGE TALK...

§

A Quarterly Newsletter from Public Works

Jan. - March, 1992 292 W. Beamer Street Vol. II, Issue 1

RECYCLING IN '92

Happy Birthday Garbage Talk!

Garbage Talk is a year old! We in the Public Works Department have certainly enjoyed preparing this newsletter for you. Garbage Talk is currently circulated to all 70 Yolo County offices and a growing list of interested citizens. If you desire to be on our mailing list or know of a friend who is interested, give us a call and consider it done!

We are definitely looking forward to preparing 1992's editions. We have weird answers to your questions...comes with the territory. Call us at 666-8775 and we will "talk trash" with you.

CHRISTMAS TREE RECYCLING

The first ever County-wide Christmas Tree Recycling Program was a tremendous success! This event, held on January 4, 1992, was open to all Yolo County residents at locations in Woodland, West Sacramento, the Yolo County Central Landfill, and the Esparto Convenience Center Transfer Station. The City of Davis handled the recovery of its Christmas trees via its curbside yard waste collection program.

Freebies Attract Customers

By coordinating with City staff and private businesses, the County gained sponsors to support this program. Valley By-Products, the County's wood recycler, donated several tons of planter mix and shredded mulch which was given to residents who participated in the program. Georgia Pacific and the California Forestry Association donated 600 Coast Redwood seedlings to participants as well. And in Woodland and Esparto, McDonalds of Woodland gave away free orange drink and over 500 Big Mac coupons to residents who turned in their trees. County and City crews staffed each of the collection locations and actually ground the old trees into usable mulch or as hog fuel for Woodland Biomass, Ltd., an energy producing plant in Woodland.

Because of the large turnout, we do not have exact figures on the total number of trees collected or wood diverted from burial in the County Landfill. Woodland Recycling Coordinator, Gerald Kindsfather, best summed it up - "we were so busy unloading trees that we could not keep count." West Sacramento's Alice Castillo adds, "many customers brought in two or more trees per carload. They brought in their neighbors trees." And even in tiny Esparto, Yolo County recycling crews were kept busy. At least 160 vehicles showed up with two or more trees. Hey, that represents over 20 percent participation for households in Esparto, Madison, and the Capay Valley! Our rough cut Christmas Tree Recycling summary looks like this:

Woodland - 600 to 800 customers, over 23 tons of trees collected. West Sacramento - 400 to 500 customers and possibly 10 tons of trees. County Landfill - 80 customers. Esparto - 160 customers and over 2 tons of trees.

Altogether, over 1,500 participants (three percent of Yolo County households) brought in about 3000 trees. We estimate that as much as 35 tons of wood waste was diverted from burial in the County Landfill.

The County and Cities of Woodland and West Sacramento thank our sponsors for making this program a smash! With this project under our belt, you can bet 1993's Christmas Tree Recycling Program will be even better!

NFL RECYCLES?

Alright sports fans, let's see if the City of Los Angeles attempts to claim "recycling credit" for rehiring Chuck Knox to coach the L.A. Rams. You Ram fans might recall that Knox was fired in 1978 as coach of the Rams. His game plan strategies were dull plus the team lost too many games. Now 14 years later, after a career in Seattle with the Seahawks, Knox will once again coach the Rams at a whopping $700,000 per season! Whether or not you realize it, the National Football League is following the "3R" precept of "Reduce, Reuse, and Recycle." It is obvious that football coaches are reusable and recyclable. Just ask the folks at Stanford about Bill Walsh!

A LOOK AT PLASTICS

Most people think all plastics are the same. You look at soda bottles, milk jugs, and ketchup bottles and think...is there a difference? YES.. there are differences between plastics. However, not until recently did we care about these differences. The reason we need to understand these differences is so that

we know how to RECYCLE them. Plastic container manufacturers commonly use one of seven various types of plastics to package foods and other consumer goods. To identify the type of plastic, the plastic industry developed number codes which are stamped on the bottom of each container. We are picky about sorting our plastics because Yolo County's local brokers only buy certain types of plastics.

The purchase prices at which brokers buy our recyclable containers vary upon the type of plastic. Just as the price of hamburger is different from the price of top sirloin, we receive different prices for milk jugs or soda bottles. For example, Smurfit Recycling in Sacramento currently buys clear milk jugs for about 4 cents per pound, while our 2-liter soda bottles go for about 30 cents a pound. The County only receives 2 cents a pound for scrap PVC pipe. Other plastics, such as styrofoam, yield up to 5 cents a pound. Unfortunately none of Yolo County's local brokers buy back colored butter tubs or detergent bottles-- the markets are so weak! Another reason brokers will not buy back some plastic is that they are sometimes contaminated, such as oil and antifreeze containers.

Check out these types of plastics:

1-PET/PETE: Mostly includes soda bottles, however some vegetable oil and peanut butter jars and frozen food containers are also made of this plastic. All PET/PETE plastics can be recycled in Yolo County.

2-HDPE: This category includes milk jugs, water jugs, orange juice jugs, and detergent jugs. Only clear jugs, such as those used for milk and water, are recyclable in Yolo County. The pigmented containers are not purchased by our brokers.

3-PVC: PVC pipe, of course. It also includes some shampoo bottles and Evian-type water bottles. Not recyclable in Yolo County, except for scrap PVC pipe which can be recycled at the County landfill.

4-LDPE: Includes plastic film wrap and plastic bags. Not recyclable in Yolo County except at participating grocery stores.

5-PP: Includes plastic tubs such as those used for packaging fresh salsa. The lids are also made of this material. Unfortunately, this plastic is not recyclable in Yolo County.

6-PS: Includes "styrofoam" type products, disposable lunch trays, and yogurt tubs. This type of plastic is also used to make those packaging "peanuts." These plastics are not recyclable in Yolo County other than at Mailboxes, Etc. where they will be reused.

7-Other: Includes plastic ketchup bottles, some shampoo bottles, and other heavy plastics. These plastics are not recyclable anywhere in the U.S.

Plastic recycling bins are located at the Yolo County Central Landfill and at the Esparto Transfer Station voluntary drop off recycling centers. The cities of Woodland, Davis, and Clarksburg have curbside pickup for some plastics.

If you have tried before to recycle those products which are actually not recyclable, do not despair. At least your heart was in the right place. You can always try to reuse those butter tubs to store tonight's leftovers or use the water bottles for your next picnic.

WHAT ABOUT THOSE PLASTIC CAPS?

We receive some very strange inquiries at the Department of Public Works on what is recyclable and what is not. We gladly answer your questions when we can, or make one up (who'd know). Well this, folks, is a "truthful" answer addressing the recyclability of milk jug caps, courtesy of an interview with the Cap Snap Company in San Jose.

Cap Snap Products is a San Jose based company that manufactures those colorful plastic caps for milk jugs, plastic juice containers, and five gallon water bottles. Cap Snap sells their caps to markets world-wide, though their primary market exists on the mainland USA. In California, Cap Snap conducts business with local dairies such as Dairy Glen, Lucerne, Bay View, and Foster Farms. To steal a cliche from Carl Sagan, Cap Snap makes "billions and billions" of caps; and dairies that package milk buy from Cap Snap.

How Caps Are Made

Cap Snap makes their plastic caps from resins purchased from Chevron, the Quantum Chemical Corporation, and Kodak Eastman. The actual caps are made of low density polyethylene (LDPE), or the #4 type of plastic on the plastic ID code. Cap Snaps newer models will have the #4 recycle logo stamped on future molds. Only virgin plastic is used to make these caps. The Food and Drug Administration will not allow Cap Snap to manufacture recycled content milk jug caps - since these caps come into direct contact with a consumer food product. Further, the actual coloring formulas to dye the caps must meet FDA requirements. Scrap plastic generated by Cap Snap is then sold to Bay Area Polymer in Fremont for about 10 to 15 cents a pound.

Recyclable or Not?

Unfortunately the answer is NO. Strict FDA requirements will not allow Cap Snap to manufacture recycled content plastics. But lets imagine that Cap Snap was able to utilize LDPE recovered from curbside recycling programs. A problem results since Cap Snap would not be able to "trace" their sources of plastics. For example, a load from the Bay Area may be more contaminated than a load from Yolo County. And by blending those various materials from different sources, the molecular structure of the LDPE would change from batch to batch and potentially foul Cap Snap's machinery. The FDA actually provides Cap Snap technical specifications for making their LDPE caps. Hmm.... a lot of inter-related factors, huh?

Not Recession Wary

Cap Snap's main competitors include plastic manufacturers in Los Angeles and Chicago. With its sales force of 25 representative organizations and its 350 employees, Cap Snap expects to do $50 million worth of sales per year! A privately held company for the past 25 years, investors might want to consult with their stockbroker if Cap Snap goes

YOLO COUNTY
HOUSEHOLD *HAZARDOUS* WASTE
TURN-IN DAY

WOODLAND
County Fair Mall
East St. at Gibson Rd.
Saturday, April 25, 1992

DAVIS
Davis Waste Removal
1818 5th Street
Saturday, May 2, 1992

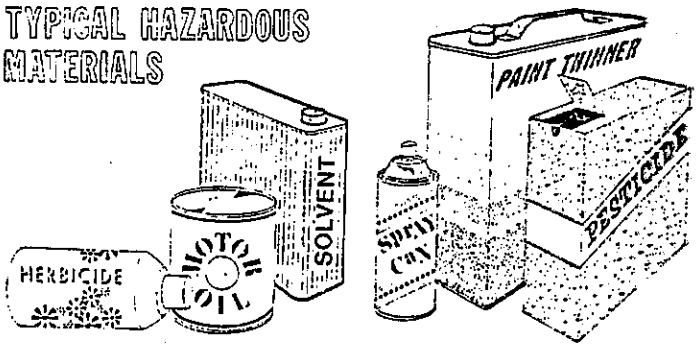
WEST SACRAMENTO
The Engstrom Center
W. Capitol Ave. at Jefferson Blvd.
Saturday, May 9, 1992

9 AM to 2 PM

FREE Turn-in and Disposal
(Yolo County Residents Only)

PLEASE PREVENT THESE MATERIALS FROM ENTERING THE YOLO COUNTY CENTRAL LANDFILL:

Poisons, Solvents, Garden Chemicals, Paints, Gasoline, Batteries, Household Cleansers, Pool Chemicals, Automotive Fluids, Used Motor Oil, Used Oil Filters, Aerosol Cans



LIMIT OF 50 LBS. SOLID WASTE, OR 5 GALLONS OF LIQUID PER RESIDENT
(**No** agricultural or business wastes accepted)

If you have explosive or radioactive materials:
Contact Yolo County Arson Bomb Investigation Unit at
(916) 666-8920 for details on proper disposal

Service Provided by:
*Yolo County Public Works and Health Departments
*Davis Waste Removal Company
*Waste Management, Incorporated
*Cities of Davis, Woodland, and West Sacramento
*Special Thanks to the Parello Family and Engstrom Properties.

For More information contact:
*Yolo County Public Works Dept., 666-8775
*Yolo County Environmental Health, 666-8646
*Davis Waste Removal, 756-4646

EL CONDADO DE YOLO
patrocina
EL DÌA DE LIMPIEZA PRIMAVERAL
y
COLECTA DE PRODUCTOS DOMÈSTICOS DANINOS

WOODLAND
County Fair Mall
East St. y Gibson Rd.
Sabado 25 de abril, 1992

DAVIS
Davis Waste Removal
1818 5th Street
Sabado 2 de mayo, 1992

WEST SACRAMENTO
Engstrom Properties
W. Capitol Ave. at Jefferson Blvd.
Sabado 9 de mayo, 1992

9 AM - 2 PM

Colecta de desperdicios GRATIS (solo para residentes en Yolo County)

PREVENGA LA ENTRADA DE ESTOS PRODUCTOS A NUESTROS BASUREROS:
Venenos, Disolventes, Pesticidas, Aceites, Pinturas, Pegamentos, Blanqueadores, Quitamanchas Caseros, Botellas de Aerosol, Químicos para Piscinas, Lubricantes, Automovilísticos. Gasolina, Baterías

LÍMITE DE 50 LBS EN DESPOJOS SÓLIDOS, O 5 GALONES LÍQUIDOS POR PERSONA
(No se aceptan desperdicios comerciales o agriculturales)

Los Participantes Recibiran:
GRATIS Un instrumento informativo para el manejo con seguridad de desperdicios dañinos

Si Usted Posee Materiales Explosivos O Radioactivos
Favor de llamar a "Yolo County Bomb Squad Investigation Unit" **(916) 666-8920.** Le daran información detallada para el desecho seguro de estos productos.

Servicio proporciando por:
Yolo County Public Works & Health Departments
Davis Waste Removal Company
East Yolo Waste Disposal Company
Cities of Davis and West Sacramento & Engstrom Properties

Para más Información puede llame a:
Yolo County Public Works Department, 666-8775
Yolo County Environmental Health 666-8646
Davis Waste Removal, 756-4646

public on the New York Stock Exchange. In this time of recession, Cap Snap is holding its own. After all, a lot of Americans drink milk. Go figure....

WHO SAYS YOU CAN'T RECYCLE BIRDS?!?

During the month of January, the California Fish and Game Department trapped one male and 21 female ring-necked pheasants at the Yolo County Central Landfill. They then relocated (recycled) them to Riverside County's San Jacinto Wildlife Area. This type of "recycling" program helps to expand and establish viable populations of pheasants in wildland habitats. Yolo County encourages recycling, and this type of program is the most fun and rewarding. Just goes to show that recycling can be for the birds!

OUR WOW NOW

Yolo County employees really took recycling to heart during 1991 by recycling nearly 33 tons of white-office-waste (WOW) paper. That's 70% more WOW paper recycled during the year of 1990... and our efforts saved as many as 560 trees, WOW!

The Public Works Department just received a shipment of additional WOW bags and stands and has begun to distribute them. To the folks at Monroe Detention Center, you are first on our list. But all County employees should be advised that we are challenged in administering the WOW program. We are searching for a strategy to transfer the collection of WOW paper from Public Works' crews to a separate entity. We'll keep you posted... in the meantime contact Dave Hiatt (666-8729) if you have any questions about WOW paper collection schedules.

TOP WOW RECYCLERS

Congratulations to the following Yolo County offices who recycled the most WOW paper. First Place winner goes to the Auditors office who recycled the most WOW paper in 1991. Second place goes to Family Support Services. Third place goes to Social Services in Woodland. These offices will officially be recognized at the first annual WOW Recycling Achievement Awards to be held later this spring.

And just in case you're wondering, the market price for WOW paper has hit rock bottom. Our local paper broker, Weyerhaeuser, paid only $10 per ton for the County's WOW paper in February. A year ago the County received as much as $50 per ton for WOW paper. The solution to raising the price of WOW paper is this: Buy recycled paper and stimulate its demand. Even if it includes paper towels, computer paper, or toilet paper. For more information on buying recycled paper contact Janice Ehrke, Manager of Purchasing Services, at 666-8070.

RECYCLING RATES INCREASE!

Rural Yolo County residents really took recycling to heart during 1991. Here's a look at what we recycled at the Yolo County Central Landfill and Esparto last year compared to 1990. All figures are reported in tons:

	1990	1991
Tires	59.71	92.07
Batteries	32.31	26.25
Oil	31.62	34.63
Glass	13.71	18.06
Aluminum	0.26	2.50
Tin Cans	0	0.56
Mix Paper	38.07	51.37
Scrap PVC	10.75	6.63
WOW Paper	18.82	32.92
HDPE/PET	0	0.25
TOTALS	205.25	265.24

Overall we recovered and recycled over 25% more recyclable materials at our two voluntary drop off recycling centers during 1991. Its plain to see that recycling is catching on.

P.S. Incidentally, the total revenue for recyclable materials for 1991 is about $13,650. This revenue helps defray the costs of tire recycling ($6,900) and the WOW program ($15,000 per year). And you folks thought we were getting rich.

NEW GARBAGE LAWS

Here's a look at what our elected officials are coming up with in Sacramento. No comment from us...

AB 861 (Compact Disc Packaging): Authored last February of 1991, this law addresses the packaging of compact discs and audiocassettes. On or after July of 1993, no retail establishment shall sell, or offer for sale, a compact disc or audiocassette in a disposable package that is more than one inch wider or longer than the compact disc or audiocassette itself.

SB 1051 (Disposable Diaper Tax): Authored in March of 1991, this law proposes an excise tax on the sale of every disposable diaper sold by distributors at the rate of one-half cent per diaper. So a box of Kimbies or Pampers might cost you an additional 30 to 60 cents. The tax monies will be deposited in a Waste Abatement Fund to be used for specified purposes. This Disposable Diaper Tax has not yet been passed into law.

The California Senate must have deliberated quite a bit on this one folks... the initial written text for SB 1051 was 36 pages long! By the way, we buried about 3,000 tons of used disposable diapers in our landfill last year.

HOUSEHOLD HAZARDOUS WASTE

County-wide Spring Cleanup

If April or May is Spring Cleaning season for you, then you might need to dispose of that unwanted paint or household chemicals you find when you clean out your garage. Your solution is not to dump these chemicals down the drain or throw them in the trash, but turn them in at one of Yolo County's Household Hazardous Waste (HHW) collection events.

Three HHW collection programs will be held in Yolo County during April and May from 9:00 a.m. to 2:00 p.m. (sharp!) in these cities:

Date	City
April 25	Woodland
May 2	Davis
May 9	West Sacramento

Acceptable materials include waste motor oil, paint, poisons, pesticides, pool chemicals, dirty gasoline, car batteries, and unspent aerosol cans.

The County Public Works Department developed the HHW collection program in 1985 to prevent toxic materials from entering the Yolo County Central Landfill. HHW that enters our landfill is harmful to landfill workers and may also pollute groundwater. You can do us a tremendous service by participating in these events. BUSINESSES ARE NOT INVITED TO THE HHW COLLECTION EVENTS!

For more information contact either the Public Works Department at 666-8775 or the County Environmental Health Department at 666-8646. Whatever you do, don't throw HHW in the trash! Either give unwanted usable materials to a friend or turn it in. Its easy...and FREE! Remember that WASTE OIL and CAR BATTERIES can be RECYCLED at the Yolo County Central Landfill. We're open 7 days a week. Call us at 666-8729.

YOLO & SOLANO COUNTIES COORDINATE AG CHEMICAL COLLECTION PROGRAM

After 2 years of planning, an opportunity exists for farmers to properly dispose of unwanted or deregistered pesticides. The first ever Yolo/Solano Farm Chemical collection program will occur Saturday, May 16, 1992, at the Caltrans Maintenance Yard near Dixon. There will be a disposal charge of $3.50 per pound for chemicals that are turned in. This price is about $10 per pound cheaper than if you hired a hazardous waste hauler to independently tender your old chemicals.

Dioxin forming precursors, 2,4,5-T, Silvex, and PCP containing compounds WILL NOT BE ACCEPTED. Unknown chemicals (and unlabeled containers) WILL NOT BE ACCEPTED.

Growers MUST schedule an appointment to turn in their unwanted chemicals. For more information contact either the Yolo County Farm Bureau at 662-6316, or the Yolo County Department of Agriculture at 666-8140. This service is provided by the Yolo and Solano County Farm Bureaus, the Yolo and Solano County Depastments of Agriculture, Caltrans, the UC Cooperative Extension, and the Yolo County Public Works Department.

TRASH TRIVIA

- Litter clean-up costs Americans $42.5 billion annually.

- The average American throws away 3 to 5 pounds of trash daily (or roughly a ton of trash every year). The average Yolo County resident throws away 7 pounds of garbage daily.

Strange But True at the County Landfill: We recently received an inquiry from a local food manufacturer regarding "bad soup." Seems that the company had up to 100 cubic yards (80 tons) of unsalable vegetable soup.

According to the company's culinary staff, this batch of soup never reached the maximum 160 degree processing temperature and they needed a place to dispose of it.

Yolo County rejected the soup; the landfill cannot accept liquids or materials containing more than 50% water content. Not even soup du jour. We can take crackers though!

NEW RECYCLER HIRED!

The County Public Works Department welcomes Hollee King, our new Recycling Intern. Hollee is a UC Davis senior majoring in Environmental Management and hopes to launch her career in recycling. Hollee brought you the article on plastics, and will assist us in preparing future editions of Garbage Talk. Welcome Hollee!

GARBAGE TALK FEEDBACK

If you have a comment, suggestion, criticism, complaint or gripe DON'T CALL US. (Actually, you really can). Let us know how we're doing at Garbage Talk. Please write us at the Yolo County Department of Public Works, 292 W. Beamer Street, Woodland, CA 95695. We appreciate your input and ideas.

That settles it! Household hazardous waste management gets fast-track priority!

Cartoon provided by Peter Smith, EBA Wastechnologies

YOLO COUNTY RECYCLES!

GARBAGE TALK...

A Quarterly Newsletter from Public Works

April - June, 1992 | 292 W. Beamer Street | Volume II, Issue 2

TALKIN' TRASH AGAIN

It's now halfway through 1992 and we hope that you find this edition of Garbage Talk to be just as bizarre as before. In this newsletter you'll learn about the successes of a local worm farmer, how our household hazardous waste collection program is faring, and what a local dry cleaning business is doing to promote recycling. You'll also read about the recyclability of flashlight batteries, and learn the market price for waste cooking shortening!

So read on Yolo County recyclers. Give us a call at 666-8775 to share your ideas for future articles. Special thanks to Witham Landscaping in Yolo for giving us the tip on this next article-- It's Worm Time!...

LOCAL WORM FARMER SELLS TO GLOBAL MARKETS

Alright now, you've read articles on municipal composting projects and/or you might even do some backyard composting yourself. Well if you ever decide on acquiring worms, let Garbage Talk show you the way.

Rainbow Worm Farm, a Yolo County business located on County Road 95 north of Davis, is a successful operation that raises worms for municipal composting and "fish bait" industries. Owned and operated by Al and Avis Cardoza, the Rainbow Worm Farm began selling worms 16 years ago and now has "three acres of property in worms." The folks at Rainbow Worm Farm say that they have "the biggest, fattest, and hungriest worms in the State!"

Hot Market for Worms

Rainbow raises its worms in beds of soil and composting fabric mixed with manure obtained from a Dixon dairy. The mature worms, otherwise known as Red Hybrid Worms, are then sold directly to contractors who operate municipal composting projects. For instance, a ton of worms were recently sold to a contractor in Fremont for wastepaper composting. "But," says owner Al Cardoza, "I've shipped worms as far as Italy, Portugal, and Israel. These worms travel more than I do!"

What Worms Eat

In terms of waste disposal, worms are a hot ticket. Compost markets are weak, unstable, and difficult to predict. And Cardoza's worms can consume their own weight in a given day. In other words, a pound of earthworms can eat a pound of decaying garbage per day. According to Cardoza the most palatable food source for worms includes kitchen scraps and yard wastes--anything rotting, composting, or of cellulose matter. "Worms will not consume living matter, nor can they eat glass, rocks, tires, or soup cans."

How Worms Travel

Depending on where Cardoza sells his worms, these little critters might travel via truck or "through the friendly skies." If transported via air, the worms are bulked in wax lined boxes contained with peat moss. Also, it is really important that the airlines do not store any worms on hot airport tarmacs. The worms are boxed in twenty-five pound cartons and sold on a price per pound basis. Prices vary based on the quantity purchased. There might actually be 900 to 1600 worms per pound depending on the season. The smallest increment sold is 500 worms. This is essentially for residents who compost at home. "Our summer worms are really skinny," says Cardoza.

Worms transported in trucks travel in beds of manure and composting fabric. Customers are charged on the quantity of worms per square foot of truck trailer. Cardoza adds, "the worms on the bottom are not crushed--they slither around all over the place, it is kind of like transporting snakes."

Though these Red Hybrids are hermaphrodites, it takes two to tango. The gestation period for a worm ranges from 7 to 28 days and depends on climate conditions, so Cardoza's worms "do not necessarily reproduce during transportation."

Rainbow Worm Farm does not fear much competition from other Yolo County entrepreneurs, but faces rigorous state permitting and technical requirements instead. Stringent proposed composting regulations may actually impede competitors from starting their own worm farms.

Yolo County is pleased to learn that Rainbow Worm Farm is helping to solve waste disposal problems. If you have any additional questions regarding composting with worms, contact Rainbow Worm Farm at 758-9906. Tours of Rainbow Worm Farm are available by appointment.

SWANSONS CLEANERS TURNS HANGERS INTO TREES

Swansons Cleaners, a Sacramento based dry cleaning company began a recycling campaign last year entitled **Plant Trees, Not Hangers.** This unique program was created to prevent dry cleaning hangers and bags from ending up in local landfills. For every hanger and bag set returned to Swansons, the company will donate a penny to the Sacramento Tree Foundation, an organization that plants trees in the greater Sacramento area. The returned bags are given to a local plastics recycling company. Swansons reuses returned hangers at their plant in Sacramento. The hangers and bags

must be generated from Swansons' stores, in good condition, and the bag must be knotted at the top of the neck of the hanger in order for Swansons to accept them. The program started last September, and by Christmas 100,000 hangers were returned (and $1,000 donated to the Sacramento Tree Foundation).

Sixty stores are located in the Sacramento area, three of them in Yolo County. One store is in West Sacramento, at the cross streets of Jefferson Blvd. and Park Blvd. The two other stores are in Davis at F and Fourth Streets, and in the Lucky shopping center at Anderson and Covell.

Swansons Cleaners' **Plant Trees, Not Hangers** campaign sets an example for all businesses to follow. Accepting the wastes that Swansons themselves generates truly benefits our environment.

For more information, contact Swansons Cleaners in West Sacramento at 373-0569, and in Davis at 758-0341 (Lucky shopping center) or at 758-3188 (4th and F Streets).

YOLO COUNTY CENTRAL LANDFILL (YCCL) HOURS

M-S 6:30am - 4:00pm
Sun 9:00am - 5:00pm
666-8730

RECYCLING RATES-TONS RECOVERED AT THE YCCL

Here's a quick look at Yolo County's recycling rates from January through June of 1992. We're happy to see that more waste motor oil is being turned in at the YCCL's waste oil tank (and not being improperly buried in the landfill). Glass and tire recycling also took a jump. Unfortunately our most valuable commodity, aluminum (at about 63¢ per pound), represents the smallest tonnages. After all, why not receive that redemption value yourself? Keep up the good work Yolo County recyclers...

1992 - TONS

	1st Qtr.	2nd Qtr.
Batteries	5.64	5.56
Oil	8.28	9.08
Glass	3.89	9.32
Wood	1636.28	2413.31
News	9.12	9.62
WOW	8.45	7.51
PVC	1.65	1.28
Tires	27.42	35.93
Tin Cans	.42	.55
Alum.	.32	.26

HOURS of the ESPARTO CONVENIENCE CENTER

Weds., Sat., and Sun.
9:30am - 5:00pm
787-3387

HITCH/from the Worcester (Mass.) Telegram and Gazette

HOUSEHOLD HAZARDOUS WASTE

Yolo County Cleans Up!!

Yolo County had three Household Hazardous Waste(HHW) events during the spring. The events ran smoothly although very windy conditions were a nuisance at the West Sacramento HHW collection event.

The first event was held in Woodland on April 26. Nearly 350 residents participated, which represented 2.4% of the total households in Woodland. The cost to the County per participant was about $67. (Total disposal cost was about $23,000).

Over 440 residents participated at the Davis event held at Davis Waste Removal on May 2. This represents 2.3% of the total number of households in Davis. The cost to the County per participant was about $53. (Total disposal cost was about $23,600).

The third event was held in West Sacramento on May 9. Over 280 residents participated, which represented 2.5% of the total number of households in West Sacramento. The cost to the County per participant was about $69. (Total disposal cost was about $19,500).

A total of 1073 households participated in these events. This represents 2.0% of the total number of Yolo County households. Approximately eighty-four 55-gallon drums of household hazardous waste which included insecticides, poisons, and flammables were packaged and sent to a hazardous waste landfill in Idaho. Twenty-five drums of petroleum based products, such as antifreeze and oil base paint, were sent to Long Beach to be used in an alternative fuels blending program, which supplies fuel for the shipping industry. Seventeen drums of unusable aerosol cans were sent to Washington for processing, and their final destination will be to a Texas hazardous waste incinerator.

Nearly 1,400 gallons of latex paint was sent to a recycling facility in the Bay Area. Over 1,500 gallons of waste motor oil was also sent to a recycling facility in Long Beach. Nearly 200 used automobile batteries were accepted by a local battery recycling

Recycled Paper

company to be recycled in Southern California.

Yolo County has operated a HHW materials swap table during the past five HHW collection events to promote source reduction, reuse, and recycling, which presents a chance to educate the public about these issues. Approximately 60 gallons and 30 pounds of pesticides, paint, motor oil, car wax, and lubricant were reused by interested citizens. Because we diverted these materials from hazardous waste disposal sites, Yolo County and its cities saved about $500 (precious dollars for the program folks!).

These events were advertised through newspaper ads, a radio talk show, and flyers that were handed to elementary school children throughout the County. West Sacramento residents also received notices in their garbage billings, which proved to be effective advertising strategy for the City.

New Regional Facility

Yolo County hopes to open a regional HHW collection facility this winter, to be opened one day per month to all County residents. However, the next event for Davis residents will be held this September at Davis Waste Removal (756-4646).

Yolo County's HHW collection program has experienced exceptional growth and success the past two years. The County of Yolo appreciates the team work and cooperative spirit that has developed between the Cities of Davis, Woodland, and West Sacramento. We would also like to thank all of the residents who participated in these events and contributed to their success.

HOUSEHOLD BATTERY UPDATE

Garbage Talk staff recently interviewed two major household battery manufacturers, Duracell and Eveready, to learn about future recycling programs for spent batteries. Unfortunately we were informed that there is no way to economically recover mercury or other metals. Battery constituents such as mercury, zinc, silver oxides, nickel, and cadmium, are unfortunately used once.

According to the trade journal Recycling Today, if zinc was removed from the battery it would represent a high quality metal and the recycling or recovery programs would be cost effective. So far, however, American companies have not pursued that alternative.

The Japanese and Europeans are creating solutions that address battery usage. Our foreign competitors are currently developing solar-charged batteries to be used in recreational battery operated appliances such as a radio that you take to the beach.

Yolo County accepts household batteries at its Household Hazardous Waste Collection events, and will continue to accept them at the HHW facility opening later this winter. Our main concern is to prevent mercury and other metals from leaching into the groundwater. Unfortunately, countless household batteries are dumped in the Yolo County Central Landfill every day. However, even though the Yolo County Central landfill is lined to protect groundwater, lets not expose it to unwarranted chemicals that are improperly disposed. **Until the County's HHW collection facility is opened later this winter, please store your old batteries or any other HHW chemicals in a cool dry area.**

WOW RECYCLING AWARDS CEREMONY

On June 4, the Yolo County Public Works Department held its first White Office Wastepaper(WOW) Recycling Achievement Awards Ceremony. The program occurred in the Atrium at the County Administration Building, and all Yolo County employees were invited to attend. Three trophies were presented to County Department offices by County Supervisor Helen Thomson. (All of the trophies were diverted from the waste stream, one from the Yolo County Central Landfill, and two from the Salvation Army store in Woodland).

Good Job!

The Auditor's Office received the First Place trophy, Family Support Services Department received Second Place, and Social Services Third. The winners were selected on the basis of WOW paper collected by Dave Hiatt, a.k.a. THE WOW MAN. (Sorry, we were unable to acquire exact weights.) A private business, First American Title of Yolo, also received a Certificate of Recognition for recycling WOW and for being an example to other businesses.

Tamara Bowcutt, Assistant Director of Public Works, hosted the ceremony and Dave Hiatt spoke about the ways and woes of collecting WOW. He also discussed possible new programs on collecting the WOW which would be easier for WOW recyclers and Yolo County Public Works. We plan to develop a more extensive office paper recycling program (using toters) by early August. More details of those programs will be discussed in the next issue Garbage Talk.

YOLO COUNTY WANTS YOUR COMMENTS!!

Source Reduction and Recycling Element (SRRE)

The SRRE for Unincorporated Yolo County and U.C. Davis, is in Draft form and available at Yolo County public libraries. Simply phrased, the SRRE is a planning document that describes Yolo County's current and future recycling programs and goals until 2000. Each of Yolo County's four cities has prepared its own SRRE; now the unincorporated County SRRE is ready for public review. Along with the SRRE is the Household Hazardous Waste Element(HHWE) for review.

Similar to the SRRE, the HHWE is a planning document that addresses HHW management in Yolo County. The HHWE discusses Yolo County's existing HHW collection program and proposed regional HHW collection facility to be constructed at the County landfill.

Negative Declaration

A Negative Declaration has been prepared for public review and comment for the County SRRE, and HHWE. The Negative Declaration states no significant environmental impacts from the two plans. The review period is from June 15, 1992 to July 15, 1992. This is also available to

review at Yolo County public libraries. (Editor's note: Sorry about informing you of the review period so late.)

Any comments, suggestions, concerns, and/or questions about any of the above documents should be directed to the Yolo County Public Works Dept. at 666-8775. Written comments should be mailed to:

Attn: Evan Edgar
Yolo County Public Works
292 West Beamer Ave.
Woodland, CA 95695

Environmental Impact Report for the Yolo County Central Landfill(YCCL)

A draft Environmental Impact Report(EIR) has been prepared for the YCCL. The Yolo County Public Works Sanitation Enterprise will re-permit the landfill to meet the future needs of County residents. The draft EIR is available for review at Yolo County public libraries between June 29, 1992 and August 6, 1992. Please send any written comments by August 13, 1992 to:

Mark Hamblin, Associate Planner
Central Landfill DEIR Comments
Yolo County Community
Development Agency
292 West Beamer Street
Woodland, CA 95695

Hearings

Hearings for all of the above projects have not yet been scheduled. The times, dates, and locations will be announced in local newspapers, or call the County Public Works Department at 666-8775.

TRASH TIDBITS

Recycled Paper...Buyer Beware

When buying recycled paper, the best choice is to buy the product that indicates that it is made from recycled POST-CONSUMER waste paper.

Paper companies claim to be helping the environment by producing recycled paper, but in actuality are recycling their own waste paper from left over trimmings used in manufacturing. What a lot of people don't know is that companies have been recycling their own wastepaper scraps for years and therefore not diverting additional waste from our landfills.

By purchasing POST-CONSUMER content recycled paper, the consumer is truly diverting waste from our landfills and at the same time creating markets for diverted waste.

Did You Know the Difference?

This symbol means
RECYCLED

It indicates;
* a package or product is made entirely or predominantly from recycled materials
* a magazine, newspaper, or other publication is printed on recycled paper

This symbol means
RECYCLABLE

It indicates;
* products or packages made from materials which, after use, can be turned in for recycling

WEST SACRAMENTO HIRES NEW RECYCLER

Garbage Talk staff is pleased to announce the hiring of Jill Holbert, Recycling Coordinator for the City of West Sacramento. Jill is originally from northern Illinois, but received her B.S. degree in Natural Resources from the University of Michigan, and recently received her M.S. in Community Development from U.C. Davis. Before working for West Sacramento, she worked for EMCON Associates as a staff planner.

The newest member of Team Yolo, Jill has been busy administering West Sacramento's new curbside recycling program which began in May. For recycling information in West Sacramento please contact Jill Holbert, Recycling Coordinator, at 373-5810. Welcome to the Team, Jill!

CLARKSBURG UPDATE

Clarksburg Recycles sends these figures for its first seven months of operation. Servicing the community of Clarksburg (12 miles south of West Sacramento), Clarksburg Recycles has recovered 7 tons of recyclables since December. Over 80% of Clarksburg's households (100 households) are participating in the program. For more information, contact Michelle Campbell at 665-1844.

TRASH TRIVIA

-The market price for waste cooking shortening(i.e. from restaurant fryers) is about 2 cents per pound.

STRANGE BUT TRUE AT THE COUNTY LANDFILL

On Friday, March 13, 1992, we received our strangest phone call yet. A Los Angeles based film production coordinator called to see if we had any dead seagulls at the County landfill. Apparently a movie was being filmed near Bodega Bay and a dead seagull was needed to roll in with the tide. "Dead animal wrangling" is Hollywood's way of acquiring props to satisfy animal rights advocates. Sorry... our flock of fowl are feeling fine!

GARBAGE TALK FEEDBACK

We Want Your Thoughts!! Please direct all ideas, comments, suggestions, or complaints to Eric Miller, Recycling Coordinator, Yolo County Public Works, 292 W. Beamer Street, Woodland, CA 95695, or call 666-8775. We have created this newsletter for you so let us know how we are doing. Until next time...

EDITORS NOTE

Garbage Talk is published quarterly by the Yolo County Public Works Sanitation Enterprise. Subscriptions are free! Our mailing list is growing and now includes addresses throughout the USA and across the Atlantic. Special thanks to Hollee King, Recycling Intern, for her assistance in preparing this edition.