

Special Waste Component

## 4.6 SPECIAL WASTE COMPONENT

The Special Waste Component identifies existing management practices for special waste materials, reviews methods to minimize the hazardous potential of these wastes, describes waste diversion alternatives, evaluates potential waste diversion programs, and recommends specific programs to help achieve the waste diversion mandates of AB 939.

Special waste includes any waste that, at its source of generation, contains physical, chemical, or biological conditions that require special management or disposal. AB 939 requires that ash, sewage sludge, industrial sludge, asbestos, shredder waste, auto bodies, and other special wastes be discussed. For Sonoma County, other special wastes include tires, grease (as a component of industrial sludge), white and brown goods, construction and demolition debris, and wood waste.

### 4.6.1 OBJECTIVES

In its 2000 Annual Report to the CIWMB, the SCWMA reported a diversion rate of 40 percent. As required by PRC Section 41820(a)(6)(B), the SCWMA filed a time extension request listing the estimated diversion from new and enhanced diversion programs. By the year 2003, the SCWMA member jurisdictions will increase residential recycling by 6.5 percent and commercial recycling by 4.5 percent. Goals for the program that addresses this increased diversion for special wastes is discussed below. The priority waste categories that will be targeted for diversion include paper, glass, metal, wood, yard debris and plastics.

- Construction and Demolition Debris: Implement a construction and demolition debris diversion program to complement existing private sector programs to divert an additional estimated 65 tons per day (tpd), equivalent to 4.5% of the disposal tonnage, by the end of 2003.

### 4.6.2 CURRENT SPECIAL WASTE ACTIVITIES

Section 18733.2 of the California Code of Regulations requires that each component include a description of current diversion activities, identify current diversion levels by material type, and discuss any anticipated decrease in existing diversion alternatives and the effects on existing solid waste management activities. This section briefly describes the existing programs, both public and private, that are operating in or providing service to Sonoma County residents or businesses.

#### 4.6.2.1 Asbestos

Asbestos is considered a special waste because it may pose significant public health problems when inhaled. 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; in insulation on pipes, boilers, and ducts; in wallboard, ceiling tiles, and floor tiles; and is generated during building maintenance, repair, or renovation operations. Asbestos-containing waste is classified as a hazardous waste if the waste contains more than 1.0 percent friable asbestos according to California Code of Regulations, Title 22. Federal regulations require that, prior to major asbestos abatement activities, advance notice be filed with the regional EPA office and the Bay Area Air Quality Management District (BAAQMD), approved removal and abatement methods be used, personnel conducting removal and abatement be properly trained and certified, and no visible emissions of dust be allowed during removal and abatement work.

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 and 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.

The County of Sonoma Department of Health Services (DHS) is responsible for monitoring asbestos removal and abatement work to ensure that the proper hazard minimization methods are being followed. The load checking program at the solid waste facilities minimizes the potential of improper asbestos disposal.

No asbestos generators were identified by the County. Removal, transportation, and disposal of any asbestos-containing waste is being handled by the private sector in accordance with the applicable state and federal laws. Nearby disposal facilities in Contra Costa County and Solano County were identified as accepting asbestos waste from Sonoma County. No diversion programs are necessary.

#### **4.6.2.2 Ash**

Ash is a residue from combustion of any solid or liquid material. The classification of ash as hazardous, designated, or nonhazardous is influenced by the type of combustion process that produces the ash and by the source material. The level of toxicity of the ash will determine the disposal practice. In accordance with federal and state regulations, all ash must be tested for toxins. If the ash is classified as hazardous or designated waste by the California Code of Regulations, the material must be handled, stored, transported, and disposed at a specially permitted landfill. Ash that does not fall into the hazardous or designated waste category does not require any special handling, storage, or disposal practices and is treated as any other municipal solid waste.

No ash generators were identified by the cities or County. Ash identified in the SWGS (0.01 percent) is from the self-haul waste stream and is assumed to be residential fireplace ash. Therefore, no recycling or diversion programs will be considered for this material.

#### **4.6.2.3 Auto Bodies**

Auto bodies are considered a special waste due to their size, weight, and the hazardous materials they contain. A profitable market for spare parts and a high demand for ferrous and nonferrous scrap have kept vehicles out of the landfills.

The Central Landfill accepts auto bodies, cut in half or quartered, for disposal only with proper Department of Motor Vehicle identification and paperwork. Since, the private sector provides sufficient means of disposal, auto bodies are rarely landfilled. Therefore, no diversion programs are necessary.

#### **4.6.2.4 Shredder Waste**

Shredder waste is the material remaining after metallic articles such as auto bodies, appliances, and sheet metal are shredded, including textile fibers, paint remainders, plastic, and rubber, which are all soaked with engine oil. Shredder waste is considered hazardous because of its high heavy metal content, and regulations are in place to monitor the disposal of this waste. Since no shredder waste is generated in Sonoma County, no special diversion programs are necessary.

#### **4.6.2.5 Construction and Demolition Debris**

Construction and demolition debris 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, roofing materials, sand, soil, lumber and wood waste, ferrous and nonferrous metals, cardboard and plastic shrink wrap.

Many private companies in Sonoma County accept rock, concrete, brick and asphalt for lower fees than those at the Central Disposal Site. These companies reprocess the material into the required specifications for road base, gravel, and other products. Therefore, most of these materials generated in Sonoma County are no longer landfilled. The materials reuse and recovery operations at the Central Disposal Site and the Healdsburg and Sonoma transfer stations accept reusable lumber and other reusable construction debris such as toilets, sinks, tubs, and cabinets. In 2002, three private companies began collecting shrink wrap to be used for producing new materials such as plastic lumber. Cardboard and metals are accepted at numerous drop-off centers throughout the county. Wood waste is discussed below.

Even though these programs are ongoing, it is estimated that an additional 4.5% of the waste stream is construction

and demolition debris that can be easily separated. Additional alternatives are discussed in Section 4.6.3.

#### **4.6.2.6 Sewage Sludge**

Most households and businesses located inside incorporated cities are connected to a sanitary sewer system. The balance use septic tank systems. Septic tank waste is disposed of by certified/permitted haulers. Many treatment facilities serve Sonoma County, including Sonoma Valley Reclamation Facility, the Russian River Reclamation Facility, the Santa Rosa Laguna Subregional Waste Water Treatment Plant (Laguna), the Forestville, Bodega Bay, Occidental, Windsor, Graton, Sea Ranch, Larkfield, and Geyserville facilities. Except for Laguna, the sludge produced by these plants is either dried on site in ponds or sent to either the Redwood Sanitary Landfill in Marin County or the Central Disposal Site. Laguna also land applies municipal biosolids to agricultural lands (approximately 10,000 wet tons per year). Synagro operates an approved land application program in Sonoma County, accepting biosolids from some local jurisdictions and some out-of-county generators.

Existing programs for composting sewage sludge and other alternatives are discussed in the Composting Component (see section 4.5).

#### **4.6.2.7 Industrial Sludge**

Industrial sludge is liquid or semi-liquid waste generated by industry and manufacturers. Industrial sludges are not identified as part of the disposed or diverted waste stream in the SWGS. Therefore, no diversion programs are considered.

#### **Grease**

In Sonoma County, restaurant grease that is not collected by renderers is discharged by the haulers into a tanker truck at the East Bay Mud Treatment Plant in Oakland.

Other future grease diversion programs include (1) reducing the amount of grease through use of biological cultures at the generation site (restaurant) and (2) processing the grease in digestors at the waste water treatment plant. The resulting sludge residue would be hauled to the landfill or possibly incorporated in future composting programs. No additional programs are considered for grease.

#### **4.6.2.8 Tires**

Tires are classified as a special waste because they are difficult to manage and dispose of at landfills due to the tire "float" phenomenon, fire hazard potential, and vector problems. Managed as a banned material, approximately 10,000 tires are collected annually at the solid waste facilities in Sonoma County by WSCD. Waste Tire Products, located in the Sacramento area, uses tires from Sonoma County and other jurisdictions in the following ways: 65% are used in civil engineering projects; 14% are processed into crumb rubber; 14% are used in agriculture; and 7% are selected for reuse as retreads.

#### **4.6.2.9 White and Brown Goods**

White goods refers to appliances such as refrigerators, washers, dryers, air conditioners, and other bulky appliances that are generally white colored. Managed as a banned materials, all white goods that are accepted at the solid waste facilities are baled as scrap metal. White goods that contain chlorofluorocarbons (CFCs) found in refrigeration and cooling systems are first processed to collect the CFCs before baling. Approximately 1,500 tons of white goods are diverted from County disposal sites as scrap metal each year.

Brown goods refers to what were traditionally brown appliances, such as televisions, stereo equipment, musical instruments, electronic equipment of all kinds, computers, printers, copiers, VCRs, and compact disc players. Now commonly known as e-waste, these items are being treated as characteristically hazardous. In 2002, televisions and computer monitors were banned from landfill disposal and are now collected for recycling the

hazardous and non-hazardous components (see Chapter 5). Also in 2002, WMI began a pilot program collecting small appliances and electronics in the single-stream curbside bins (see section 4.4). The material reuse and recovery programs operating at the Central Disposal Site and the Healdsburg and Sonoma transfer stations accept working white and brown goods, as do many private businesses throughout Sonoma County, for resale to the general public.

#### **4.6.2.10 Wood Waste**

Wood waste is classified as a special waste because of its bulk and difficulty in handling. Lumber, tree stumps, building materials, large furniture items, and other household and commercial items are included. Unpainted wood waste is accepted at the solid waste facilities at a reduced disposal fee and is processed into mulch products for sale to the general public, a program that diverts over 12,000 tons per year. In addition, there are several private companies in Sonoma County that accept wood waste to produce mulch products. The wood waste processing and marketing program is a regional program managed by the SCWMA. Reusable building materials, furniture, and other items made of wood are accepted at the material reuse and recovery centers (see section 4.4).

#### **4.6.2.11 Litter Abatement**

The SCWMA currently funds a Roadside Cleanup Program to address litter abatement along rural roads in Sonoma County. Funding is provided through grant funds from the Beverage Container Recycling Program. The DTPW funds the Community Cleanup Program that offers waived disposal fees to each jurisdiction for a maximum of two community cleanups per year, not to exceed a total of 10 calendar days. Participants are required to complete an application and obtain prior approval for waived disposal fees before holding a community cleanup which must benefit public property or the community as a whole. Other cleanups that occur in Sonoma County include river and beach cleanups. Each of these types of cleanups are required to recycle all beverage containers, scrap metal, appliances, tires, yard debris and wood debris, in addition to properly disposing of all hazardous wastes.

#### **4.6.2.12 Disaster Waste**

In Sonoma County's recent history natural disasters have occurred, including flooding, mud slides and earthquakes, that unexpectedly increase the amount of solid waste that needs to be disposed. In such instances, existing programs are mobilized and adjusted to handle the increased flow of materials that result. Disaster waste will continue to be handled in the same manner as solid waste, including the diversion of all banned materials (yard debris, wood waste, tires, appliances) and recyclables and the proper disposal of hazardous wastes.

#### **4.6.2.13 Current Special Waste Diversion Levels**

Current diversion for special wastes are included in Table 4.10 (see section 4.4).

#### **4.6.2.14 Anticipated Decrease in Special Waste Activities**

No existing special waste diversion programs are expected to decrease or be phased out. Diversion of some special wastes is expected to be enhanced so that existing programs can become more effective in diverting waste or minimizing hazard potential.

### **4.6.3 EVALUATION OF SPECIAL WASTE ALTERNATIVES**

The purpose of the alternatives evaluation process is to choose appropriate special waste programs for the various areas in Sonoma County by applying a set of technical, economic, and institutional criteria to a wide range of special waste alternatives. Each alternative is evaluated using the criteria in Table 4.27, including the issues specified in Section 18733.3(b) of the regulations: consistency with local planning, barriers to implementation, and implementation costs. In Table 4.27, the weight of the evaluation criteria represents the relative importance of one criteria to the others and is used in the evaluation of any new programs that may be considered in the

future. The alternatives evaluated are listed in Table 4.28, and the results are found in Tables 4.29 to 4.31.

#### 4.6.3.1 Description of Special Waste Alternatives

Twelve special waste alternatives were considered to manage construction and demolition debris, tires, wood waste, and discarded white and brown goods. The alternatives are intended to divert the special wastes from landfilling and to reduce the potential hazards associated with the materials.

#### Construction and Demolition Debris

Asphalt and concrete, the major components of the construction and demolition debris waste stream, have been targeted for analysis. In addition, construction and demolition debris material sorting targeting debris boxes from construction, remodeling, and demolition projects is also evaluated.

##### Asphalt/Concrete Recycling

Asphalt recycling can be performed at the construction site or at a recycling facility using a hot or cold process. Both methods involve crushing the deteriorated asphalt aggregate and processing it before laying the material on the roadway to be compacted.

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.

##### Construction and Demolition Debris Material Sorting

Construction and demolition debris material sorting can be a simple operation consisting of a concrete pad and

Table 4-27: Criteria for Evaluating Special Waste Alternatives	
Criteria	Weight
• Waste Diversion Potential	10
• Ease of Tracking Diversion	5
• Environmental Impacts/Benefits	12
• Operating Experience	6
• Conformity with Local Markets	8
• Facility/Program Requirements	6
• Capital Cost	6
• Cost Effectiveness	9
• Operating Costs	8
• Conformity with State Hierarchy	4
• Ease of Implementation	6
• Private Sector Participation	6
• Changes in Waste Type Generation/Use	7
• Adaptability to Changing Social Conditions	8
• Consistency with local policies and conditions	7
• Local barriers to implementation	7
• Implementation Cost	7
• Availability of end uses for recovered materials	7

debris boxes using labor to sort the materials or a more complex operation including a mechanical line, heavy equipment to move the materials, and labor to work on the sorting line.

## **Tires**

Managed as a banned material, tires have been targeted for diversion activities. Six tire diversion alternatives are identified and described below.

### **Physical Reuse of Tires**

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 methods.

### **Tire Retreading**

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, because 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

**Table 4-28: Special Waste Alternatives Evaluated**

<b>Table 4-28: Special Waste Alternatives Evaluated</b>	
<b>Asphalt/Concrete Recycling</b>	Reuse/recycle of asphalt millings and concrete from construction and demolition activity.
<b>C&amp;D Material Sorting</b>	Sort C&D materials from debris boxes coming from construction, remodeling, and demolition projects for diversion of targeted materials.
<b>Tire Reuse</b>	Reuse scrap tires in projects.
<b>Tire Retreading</b>	Separate tires for retreading; procure retreaded tires where possible; encourage public to use retreads.
<b>Crumb Rubber for Tires</b>	Scrap tires broken into small particles.
<b>Tire Shredding</b>	Slice tires into 2-foot by 2-foot sections for landfilling or other uses.
<b>Tire-Derived Fuel</b>	Whole or shredded tires processed into small (2-inch by 2-inch) chips for use as fuel supplement for industry.
<b>Whole-Tire Incineration</b>	Whole tires used as a source of fuel for energy facilities.
<b>Repair and Reuse of White and Brown Goods</b>	Appliances are repaired and resold or donated to new users.
<b>Salvaging of Scrap Metals from White Goods</b>	Dismantling and shredding of appliances for scrap value after any hazardous materials are removed.
<b>Recovery and Chipping of Wood Waste</b>	Separating construction and demolition wood debris and large stumps for chipping into landscape materials and other uses.

rubber is vulcanized. In the precured process, a precured, premolded rubber tread is applied. Retreading facilities are established in the surrounding area.

Retreading reduces the number of tires entering the waste stream. About 95 percent of the tire is reused in the retread process. However, some waste is generated, such as rejected casings and rubber buffing. The casings can be shredded or incinerated. Another by-product is crumb rubber.

### **Crumb Rubber from Tires**

In this process, scrap rubber is broken into small particles by mechanical or cryogenic processing. Mechanical processes break the tires down into small pieces and remove the fiber and steel. In 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 rubberized asphalt; sports, recreational, and feedlot surfaces; soil improvements; oil spill clean-up; and new rubber products. It can replace up to 50 percent of the virgin rubber needed to make carpet backing, doormats, friction-breaking material, roofing adhesives, car underseals and other protective coatings, and new rubber products.

### **Tire Shredding**

Tire shredding is a mechanical process that slices the tire into 6 to 10 pieces. Tire shredding reduces the volume of the tires, allowing for easier handling. If shredded into smaller pieces, the shredded tires can be used as tire-derived fuel.

### **Tire-Derived Fuel**

Since tire rubber has a high energy value, whole tires can be shredded into small chips (about 2 square inches or less) for use as a fuel supplement in 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.

### **Whole-Tire Incineration**

In this process, whole or shredded tires are used as the sole source of fuel for an incineration 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) that 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.

### **White and Brown Goods**

Existing recycling successfully diverts the majority of white goods disposed in the county. Discarded appliances can be repaired and reused to extend their lives or baled as scrap metal once the hazardous materials are removed. Reusable brown goods can be diverted to material reuse and recovery facilities and to private businesses such as thrift stores. E-Waste is evaluated in Chapter 5.



Table 4-29: Special Waste Alternatives: Construction and Demolition Debris Program Evaluation

Criteria	Asphalt and Concrete Recycling	C&D Materials Sorting
1. Waste diversion potential	Less than 5% of the total waste stream.	Estimated to be 4.5% of total waste stream.
2. Ease of tracking diversion	Easily targeted material, readily separated.	Easily targeted material, readily separated.
3. Environmental impact	Some potential environmental impacts (dust and noise). Impacts are known and controllable.	Some potential environmental impacts (dust and noise). Impacts are known and controllable.
4. Operating experience	High degree of technical reliability.	Existing programs operating throughout the State.
5. Conformity with local market conditions	Local markets and end-users currently exist.	Local markets and end-users currently exist.
6. Facility/program requirements	Few facility requirements are expected.	Minimum requirement is a concrete pad, debris boxes and labor to sort. Material sorting lines may be constructed by private sector.
7. Capital cost	None. Jurisdictions typically use private companies.	Low for sorting pad. Material sorting lines require high initial capital investment.
8. Cost effectiveness	Cost effective for local jurisdictions since they typically use private companies to perform work.	<ul style="list-style-type: none"> <li>Material revenues may be sufficient to cover operating costs.</li> <li>Dependable markets and local hauling service needed.</li> <li>Approximate cost per diverted ton has yet to be determined.</li> </ul>
9. Operating costs	Moderate portion of waste requiring landfill; some reduction in waste management costs anticipated.	Moderate portion of waste requiring landfill; some reduction in waste management costs anticipated.
10. Conformity with AB 939 hierarchy	Consistent with the second level of the hierarchy.	Consistent with the second level of the hierarchy.
11. Ease of implementation	Implementation time one to three years with some staff assistance.	Implementation time less than one year for temporary program. Longer for development of material sorting lines by private sector.
12. Private-sector participation	Significant opportunities for private-sector involvement as processor and end-user.	Significant opportunities for private-sector involvement as processor and end-user.
13. Changes in waste type generation/use	Operation expected to have little or no impact on waste generation type or use.	Operation expected to have little or no impact on waste generation type or use.
14. Adaptable to social conditions	Does not promote increased public awareness or waste reducing behavior.	Does not promote increased public awareness or waste reducing behavior.
15. Consistency with Local Conditions	Consistent with local conditions.	Consistent with local conditions.
16. Institutional Barriers to Implementation	None.	None.
17. Implementation Cost	None.	Unknown at this time, but include hiring a contractor to sort the material.
18. Availability of end uses for recovered materials	Asphalt is reprocessed into new asphalt. Concrete reprocessed and used in new concrete mixes and as subbase aggregate.	Wood: reuse, mulch and fuel. Scrap metal: various recycling markets. Cardboard: recycled into new cardboard and various paper products. Asphalt/concrete: concrete mixes, subbase aggregate. Shrink wrap: plastic lumber. Asphalt roofing: paving materials. Gypsum: new drywall.

**Table 4-30: Special Waste Alternatives: Tire Management Program Evaluation**

<b>Criteria</b>	<b>Tire Shredding</b>	<b>Physical Reuse</b>	<b>Retreading</b>
<b>1. Waste diversion potential</b>	0.1% of the total waste stream.	0.1% of the total waste stream.	0.1% of the total waste stream.
<b>2. Ease of tracking diversion</b>	Accurate assessments can be performed at moderate cost of time and money.	Accurate assessments of activity may be difficult or costly.	Accurate assessments can be performed at moderate cost of time and money.
<b>3. Environmental impact</b>	Generally no adverse impacts or nuisance effects.	Generally no adverse impacts or nuisance effects.	Generally no adverse impacts or nuisance effects.
<b>4. Operating experience</b>	High degree of technical reliability; extensively used in U.S.	High reliability; generally not technical in nature.	High degree of technical reliability; extensively used in U.S.
<b>5. Conformity with local market conditions</b>	No markets exist for tire shreds in the county.	Currently limited local end-use markets.	<ul style="list-style-type: none"> <li>Markets exist in the commercial and government sector for truck, bus, and other large tires.</li> <li>Passenger tire retread markets require development.</li> </ul>
<b>6. Facility/program requirements</b>	None.	No facility requirements. Tire reuse program requirements will require development.	Retread programs will require development and management.
<b>7. Capital cost</b>	None.	None.	None.
<b>8. Cost effectiveness</b>	The cost effectiveness is between \$10 and \$100 per diverted ton.	The cost effectiveness varies depending on the use; however, in most cases the cost is between \$10 and \$100 per diverted ton.	The cost effectiveness is between \$10 and \$100 per diverted ton.
<b>9. Operating costs</b>	Little or no impact on current waste management costs. Private sector program.	Little or no impact on reducing waste management costs; amount diverted anticipated to be small.	Moderate impact on waste management costs through reduction in bulk collected and avoided landfill costs.
<b>10. Conformity with AB 939 hierarchy</b>	This alternative reduces the handling and disposal problems associated with tires; however, it does not receive any diversion credit if tire shreds are landfilled.	Physical reuse conforms with the highest level of the hierarchy.	Retreading conforms with the second level of the hierarchy.
<b>11. Ease of implementation</b>	Tires are diverted at the landfill for shredding. Implementation time for expansion is less than one year if markets are identified.	Implementation time less than one year.	Retreading facilities exist in the surrounding area. Implementation time is less than one year.
<b>12. Private-sector participation</b>	Highly established in the private sector.	Moderate opportunities for private-sector involvement as end-users.	Highly established in the private sector.
<b>13. Changes in waste type generation/use</b>	This alternative is expected to create little or no shift in waste type generation or use.	This alternative is expected to create little or no shift in waste type generation or use.	This alternative is expected to create little or no shift in waste type generation or use.
<b>14. Adaptable to social conditions</b>	Alternative does not increase public awareness or waste-reducing behavior.	Provides small opportunity for increasing public awareness.	Alternative does not increase public awareness or waste-reducing behavior.

Table 4-30: Special Waste Alternatives: Tire Management Program Evaluation

Criteria	Tire Shredding	Physical Reuse	Retreading
<b>15. Consistency with Local Conditions</b>	Consistent with local conditions.	Consistent with local conditions.	Consistent with local conditions.
<b>16. Institutional Barriers to Implementation</b>	None.	None.	None.
<b>17. Implementation Cost</b>	Minimal costs to hire hauling contractor to deliver tires to a private facility.	Minimal costs to hire hauling contractor to deliver tires to a private facility.	Minimal costs to hire hauling contractor to deliver tires to a private facility.
<b>18. Availability of end uses for recovered materials</b>	Incineration only.	Potential users include residents, small businesses, schools, and local government.	Local government and truck, bus, taxi and others use retreads.

Table 4-30: Special Waste Alternatives: Tire Management Program Evaluation

Criteria	Crumb Rubber	Tire-Derived Fuel	Whole-Tire Incineration
<b>1. Waste diversion potential</b>	0.1% of the total waste stream.	0.1% of the total waste stream.	0.1% of the total waste stream.
<b>2. Ease of tracking diversion</b>	Difficult to obtain accurate diversion numbers from existing facilities.	Difficult to obtain accurate diversion numbers from existing facilities.	Difficult to obtain accurate diversion numbers from existing facilities.
<b>3. Environmental impact</b>	Generally no adverse impacts assuming proper management and appropriate siting of the facility.	<ul style="list-style-type: none"> <li>· Few instances of adverse environmental impact in the shredding process.</li> <li>· Impacts of TDF incineration are known and controllable.</li> </ul>	<ul style="list-style-type: none"> <li>· Air pollution impacts not fully understood.</li> <li>· May contribute to air basin degradation.</li> </ul>
<b>4. Operating experience</b>	Existing operations use buffings; few known whole-tire facilities.	A high degree of technical reliability; few periods of reduced operations.	Existing operations have had periods of closure or serious technical problems.
<b>5. Conformity with local market conditions</b>	Potential short-term market opportunities for crumb rubber product use.	Potential short-term market opportunities for shredded product as fuel.	Energy market opportunities exist for power sales to local utility or industry.
<b>6. Facility/program requirements</b>	No facility requirements. Use private-sector facility.	No facility requirements. Use private-sector facility.	No facility requirements. Use private-sector facility.
<b>7. Capital cost</b>	None.	None.	None.
<b>8. Cost effectiveness</b>	<ul style="list-style-type: none"> <li>· Dependent on strong end-user markets for crumb rubber.</li> <li>· Cost per diverted ton is approximately \$25.</li> </ul>	<ul style="list-style-type: none"> <li>· Dependent on strong end-user markets for tire chips.</li> <li>· Cost per diverted ton is approximately \$17.</li> </ul>	<ul style="list-style-type: none"> <li>· Normally requires large on- or near-site tire volumes for cost effectiveness.</li> <li>· Cost per diverted ton is approximately \$170.</li> </ul>
<b>9. Operating costs</b>	Little or no impact on current waste management costs.	Little or no impact on current waste management costs.	Little or no impact on current waste management costs.
<b>10. Conformity with AB 939 hierarchy</b>	Conforms with the second level of the hierarchy.	Transformation process, the lowest level of the hierarchy.	Incineration is in the lowest level of the hierarchy.
<b>11. Ease of implementation</b>	Implementation time 1.5 to 3 years for design, construction, equipment testing, market development, etc.	Assuming a private-sector tire shredding facility exists, implementation time required will be 1.5 to 2 years for market development and possible retrofitting of existing boiler facilities.	Assuming there is a current market to incinerate tires, implementation time required to negotiate contract will be less than one year.
<b>12. Private-sector participation</b>	Significant opportunities exist for private-sector development and operation.	Significant opportunities exist for private-sector development and operation.	Significant opportunities exist for private-sector development and operation.
<b>13. Changes in waste type generation/use</b>	Operation expected to have little or no impact on waste generation type or use.	Operation expected to have little or no impact on waste generation type or use.	Operation expected to have little or no impact on waste generation type or use.
<b>14. Adaptable to social conditions</b>	Does not promote waste-reducing behavior or public awareness.	Does not promote waste-reducing behavior or public awareness.	Does not promote waste-reducing behavior or public awareness.
<b>15. Consistency with Local Conditions</b>	Consistent with local conditions.	Consistent with local conditions.	Consistent with local conditions.

Table 4-30: Special Waste Alternatives: Tire Management Program Evaluation

Criteria	Crumb Rubber	Tire-Derived Fuel	Whole-Tire Incineration
<b>16. Institutional Barriers to Implementation</b>	None.	None.	None.
<b>17. Implementation Cost</b>	Minimal costs to hire hauling contractor to deliver tires to a private facility.	Minimal costs to hire hauling contractor to deliver tires to a private facility.	Minimal costs to hire hauling contractor to deliver tires to a private facility.
<b>18. Availability of end uses for recovered materials</b>	Local governments use rubberized asphalt in some projects. Other uses include sports, recreational and feedlot surfaces, soli improvements, oil spill clean up and new rubber products (i.e., carpet backing, doormats, roofing adhesives).	Fuel supplement used in pulp, paper, lumber, cement, and other heavy industries.	Incineration only.

Table 4-31: Special Waste Alternatives: White and Brown Goods and Wood Waste Program Evaluation

Criteria	White and Brown Goods Repair and Reuse	White and Brown Goods Scrap Metal Recovery	Wood Waste Recovery
1. Waste diversion potential	Less than 2% of the total waste stream.	Less than 2% of the total waste stream.	About 10% of the total waste stream.
2. Ease of tracking diversion	Difficult to track diversion; time is in management of program.	Relatively easy to track diversion; time is in management of program.	Diversion numbers provided by private contractor under regional agreement.
3. Environmental impact	Generally no adverse impacts.	<ul style="list-style-type: none"> <li>Few instances of adverse environmental impacts (related to the hazardous substances in some white goods).</li> <li>Impacts are known and controllable.</li> </ul>	Generally no adverse environmental impact. Little nuisance effect if properly sited for noise and dust. Some energy use required.
4. Operating experience	High degree of reliability; few technical failures.	High degree of reliability; few technical failures.	High degree of reliability; few technical failures.
5. Conformity with local market conditions	Residents will serve as the local market for repaired goods. Market subject to fluctuation.	Scrap metal markets exist.	Residents will serve as the local market for repaired goods. Market subject to fluctuation.
6. Facility/program requirements	None. Program exists.	None. Program exists.	None. Program exists.
7. Capital cost	None.	None.	None; absorbed by private contractor.
8. Cost effectiveness	<ul style="list-style-type: none"> <li>The cost effectiveness varies depending on the level of repair required and number of repairable items.</li> <li>Cost per diverted ton is between \$10 and \$100.</li> </ul>	<ul style="list-style-type: none"> <li>The cost effectiveness varies depending on the cost of removal and disposal of hazardous materials.</li> <li>Cost per diverted ton is between \$10 and \$100.</li> </ul>	Cost per diverted ton is between \$10 and \$12.
9. Operating costs	Moderate impact on reducing waste management operating costs due to reduced bulk in waste stream.	Moderate impact on reducing waste management operating costs due to reduced bulk in waste stream.	Moderate impact on reducing waste management operating costs due to reduced bulk in waste stream.
10. Conformity with AB 939 hierarchy	Conforms with the highest level of the hierarchy.	Conforms with the second level of the hierarchy.	Landscape product or compost conforms to the second level of the hierarchy. Hog fuel product involves transformation.
11. Ease of implementation	Existing program by private businesses.	Scrap metal recovery is an existing program.	Existing program.
12. Private-sector participation	Significant opportunities for private sector to own and operate a repair yard for white goods.	Significant opportunities for private-sector involvement both as the scrap metal salvager and end-user.	Some opportunities for private sector.
13. Changes in waste type generation/use	Operation expected to have little or no impact on waste generation type or use.	Operation expected to have little or no impact on waste generation type or use.	Operation expected to have little or no impact on waste generation type or use.
14. Adaptable to social conditions	Promotes high level of public awareness and waste-reducing behavior.	Some opportunity to promote public awareness.	Promotes high level of public awareness and waste-reducing behavior.

**Table 4-31: Special Waste Alternatives: White and Brown Goods and Wood Waste Program Evaluation**

Criteria	White and Brown Goods Repair and Reuse	White and Brown Goods Scrap Metal Recovery	Wood Waste Recovery
<b>15. Consistency with Local Conditions</b>	Consistent with local conditions.	Consistent with local conditions.	Consistent with local conditions.
<b>16. Institutional Barriers to Implementation</b>	None.	None.	None.
<b>17. Implementation Cost</b>	None.	None.	None.
<b>18. Availability of end uses for recovered materials</b>	Existing local retail market for reconditioned appliances.	Extensive scrap metal markets exist.	Local material reuse and recovery centers sell usable wood products; mulch and fuel markets exist for chipped wood.

## Wood Waste Recovery

Wood waste recovery programs target all generators. This material is easily separated at the source and is often received separated at the Central Disposal Site. Material includes tree stumps, pallets, building materials, furniture, and other household and commercial items and is stockpiled in separate areas at landfills and transfer stations. Reuse programs repair and sell some items, and the balance may be chipped for landscape materials, used as fuel, or used as a bulking agent for sludge compost programs.

### 4.6.4 SELECTED SPECIAL WASTE PROGRAMS

Special waste programs were selected based on local conditions and concerns, best professional judgment, and the SWGS indicating these materials are currently being disposed of in significant quantities. Section 19733.4 of the regulations require a detailed discussion on the selection of certain alternatives for implementation; the development of anticipated diversion rates; identification of anticipated end-uses for the diverted materials; handling and disposal requirements; and required facilities.

#### 4.6.4.1 Selected Special Waste Programs

The special waste management programs selected are listed in Table 4-32 and includes ongoing operations of existing programs. These programs focus on available reuse and recycling techniques and build on existing area recycling activities.

### Construction and Demolition Debris

The SCWMA estimates that there is an additional 4.5% diversion that can be obtained from implementing a construction and demolition debris diversion program that includes asphalt, concrete, lumber, metal, yard debris, gypsum, roofing, cardboard and plastic wrap as targeted materials. The educational component necessary for this program is discussed in Section 4.7. Although the SCWMA is confident that the private sector will develop the facilities necessary to sort construction and demolition debris that is currently delivered to disposal, a temporary C&D diversion program is proposed for the Central Disposal Site so that materials can be diverted as soon as possible. This temporary program will consist of a concrete pad, debris boxes, and labor provided by a contractor to sort those loads identified as having significant fractions of divertable materials. Economic incentives to deliver source-separated materials will be implemented at all disposal sites, and additional material

bans will be considered.

Economic incentives are currently in place at the County's solid waste facilities that effectively divert the majority of asphalt and concrete from landfill disposal. Private businesses exist that accept materials, including asphalt, concrete, rock, brick, and tile roofing, for drop-off or low fees compared to the existing tipping fee. Therefore, a separate program that targets asphalt and concrete specifically is no longer necessary. The annual Recycling Guide lists eight private businesses that accept asphalt, concrete, rock, brick, and tile roofing.

## Tires

Managed as a banned material, tires will continue to be collected by a contractor (currently WSCD) for handling and shipped to Waste Tire Products for processing. Under the agreement with the DTPW, the contractor is required to market the tires collected from the County's solid waste facilities and to make appropriate adjustments should the markets change. Currently, tires from Sonoma County are used in civil engineering and agricultural projects, processed into crumb rubber, and retreaded.

## White and Brown Goods

Managed as a banned material, white goods will continue to be separated for proper removal of hazardous materials and baled as scrap metal. Economic incentives existing at all solid waste facilities redirect some appliances to private businesses that repair and resale them. Although some repair and reuse is expected to continue, the SCWMA recognizes that the changes in technology to more energy efficient appliances will increase the number of old appliances that are recycled. The material reuse and recovery operations at the Central Disposal Site and the Healdsburg and Sonoma transfer stations will continue to accept working appliances for resale.

**Table 4-32: Selected Special Waste Programs**

Category	Program	Implementation Steps
Construction and Demolition	C&D Material Sorting	<ul style="list-style-type: none"> <li>Evaluate additional landfill bans on C&amp;D materials</li> <li>Analyze a separation surcharge for debris boxes and other loose loads containing banned materials</li> <li>Create a temporary mixed C&amp;D separation program to be operated by a private contractor at the Central Disposal Site</li> <li>Educate permit staff, developers, and the public</li> </ul>
Tires	Tire Management	<ul style="list-style-type: none"> <li>Continue existing collection program at all solid waste facilities</li> <li>Maintain contractor agreement to market tires</li> </ul>
White and Brown Goods	Repair and Reuse	<ul style="list-style-type: none"> <li>Educate public about repair, resale and donation opportunities</li> <li>Educate public about material reuse and recovery operations</li> </ul>
	Scrap Metal Salvaging	<ul style="list-style-type: none"> <li>Remove hazardous material</li> <li>Bale scrap metal</li> </ul>
Wood Waste	Wood Waste Processing	<ul style="list-style-type: none"> <li>Separate material suitable for repair, reuse, and resale</li> <li>Separate material for chipping as landscape/soil amendment products</li> <li>Educate public on reuse program and availability of landscape products</li> </ul>



The annual Recycling Guide currently lists 13 businesses that will collect appliances for recycling. A few of those businesses may repair some for resale. Listings for appliances are also accepted for SonoMax, the quarterly newsletter for the SCWMA's material exchange program.

Brown goods, such as furniture and small electronics in working condition, will continue to be accepted at the material reuse and recovery operations at the Central Disposal Site and the Healdsburg and Sonoma transfer stations. In addition, there are many private businesses and non-profit organizations throughout Sonoma County that accept these materials, a few of which are listed in the annual Recycling Guide.

Computer monitors and televisions (CRTs) are now being managed as a banned material and are being collected for removal of hazardous materials and recycling of non-hazardous components. Economic incentives existing at all solid waste facilities may redirect some CRTs to private businesses for repair and resale or donation (see Chapter 5). Six local businesses that accept a variety of electronics for repair and resale, donation, and recycling are listed in the annual Recycling Guide.

### **Wood Waste Recovery**

The SCWMA will continue to manage the wood waste diversion program as a regional program funded through tipping fees at the County's solid waste facilities. Wood waste that is delivered to the transfer stations is stockpiled and then transferred to the Central Disposal Site. As a banned material, wood waste is currently directed to a separate area at the Central Disposal Site where it is chipped for use as mulch products or as fuel. The mulch products are also cured in windrows to eliminate pathogens prior to selling the products to local businesses or the public. Some wood waste is reusable lumber, which is accepted at various drop-offs throughout the county including the material reuse and recovery programs operating at the Central Disposal Site and the Healdsburg and Sonoma transfer stations.

Currently, the wood waste program is diverting approximately 12,000 tons per year. With the implementation of the construction and demolition debris material sorting program, additional wood waste will be diverted from disposal.

Six private businesses are listed in the annual Recycling Guide as accepting various types of wood waste. Local haulers that provide debris box services include information about how to separate wood waste from other materials in order to reduce the overall cost of disposal to their customers.

#### **4.6.4.2 Costs**

Programs that are operated by DTPW processing white and brown goods, managing the material reuse and recovery centers, and tire collection are funded through tipping fee revenues. Education programs are funded by a surcharge collected as part of the tipping fees and are implemented by the SCWMA. 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.

Costs for asphalt and concrete recycling and processing of tires collected at the solid waste facilities are handled by the private sector. Since the program is still being developed, costs for the temporary C&D material sorting facility are not available. The annual contract for tire collection and management is \$24,850 in 2001. The cost for removing hazardous materials from appliances is \$22,000 per year. The costs for managing the material reuse and recovery centers is approximately \$261,000 of which an estimated 10% is for managing white and brown goods. Collection and transportation of CRTs to a recycling facility is \$126,000 per year. Each of these contracts are part of the DTPW's fiscal year budgets. The SCWMA contracts for the wood waste processing program at a cost of \$140,800 per year.

#### **4.6.4.3 Role of Special Wastes in Meeting State Diversion Goals**

Most of the selected special waste programs have been in operation for several years, resulting in a 2000 diversion rate of 40%. In addition, implementation of the construction and demolition debris material sorting is

anticipated to provide an additional 4.5% towards the 50% diversion goal. Current diversion tonnages of special waste materials can be found in Table 4-10 (see section 4.4).

#### **4.6.4.4 Operating, Handling, and Facility Requirements**

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.

#### **Construction and Demolition Debris**

The SCWMA is confident that the private sector will develop the facilities necessary to sort construction and demolition debris that is currently delivered to disposal sites as mixed loads in debris boxes. In order to begin diverting the material as soon as possible, a temporary C&D material sorting program is proposed for the Central Disposal Site. This temporary program will consist of a concrete pad, debris boxes, and labor provided by a contractor to sort those loads identified as having significant fractions of divertable materials. Economic incentives to deliver source-separated materials will be implemented at all disposal sites, and additional material bans will be considered.

Some of the recovered materials, including wood waste, can be added to the programs currently operating at the Central Disposal Site. The contractor will be responsible for finding markets for all materials sorted, including scrap metal and cardboard. The SCWMA will rely on private sector facilities for crushing and storing materials such as asphalt and concrete for resale or reuse.

#### **Tires**

Since tires are a banned material, they will continue to be collected in a separate area at the solid waste facilities so that the private contractor can remove them for processing and delivery to market. Special handling fees for tires are part of the existing disposal fee structure.

#### **White and Brown Goods**

Since white goods are a banned material, they will continue to be collected in a separate area at the solid waste facilities so that the hazardous materials can be removed prior to baling as scrap metal and delivery to market. CRTs will also be collected in a separate area at the solid waste facilities so that the private contractor can remove them for processing and delivery to market. Special handling fees for these materials are part of the existing disposal fee structure.

The materials reuse and recovery centers will continue to accept reusable brown goods. No new facilities are expected to be necessary for handling white and brown goods.

#### **Wood Waste**

Existing wood waste collection and processing operations will continue to handle reusable and unusable materials delivered to the solid waste facilities. Existing operations include providing separate collection areas at the transfer stations prior to transferring the material to the Central Disposal Site, providing a site for processing wood waste at the Central Disposal Site, economic incentives for source-separated loads in the form of lower tipping fees, and providing space for reusable lumber at the materials reuse and recovery centers.

No new facilities are required for the current wood waste processing program. If the composting program is relocated in the future, wood waste processing would continue to be included as part of the operations. Future facility requirements for the composting program are discussed in section 4.5.

#### 4.6.5 MARKETS AND LOCAL END-USES FOR RECOVERED MATERIALS

The anticipated end-uses and end-users for the materials recovered by the selected special waste programs are shown in Table 4-33.

#### 4.6.6 IMPLEMENTING SPECIAL WASTE PROGRAMS

Section 18733.5 requires identification of the entity or entities responsible for implementing the program, a description of implementation tasks, task implementation schedules for the short-term and medium-term planning periods, and identification of implementation costs and revenues.

##### 4.6.6.1 Responsible Entities

The DTPW will be the primary party responsible for implementation and coordination of the special waste program. Where feasible and efficient, DTPW will coordinate county programs with SCWMA educational efforts. Responsible parties for each program are listed in Table 4-34.

**Table 4-33: Anticipated End-Uses and End-Users of Recovered Materials**

##### **Construction and Demolition Debris**

- Economic incentives will remain in effect for concrete and asphalt. Higher tipping fees have effectively moved disposal of these materials to private companies for processing.
- A temporary C&D material sorting area will be implemented at the Central Disposal Site under an agreement with a private contractor. Materials will be marketed by the contractor.

##### **Tires**

- Targeted retread markets will include local government and truck, bus, taxi, and other transportation operators.
- Targeted end-users for the physical reuse program will include individual residents, small businesses, schools, and local government, the State Department of Transportation, and others as identified in the program.
- Crumb rubber end-users will include local government asphalt paving contractors who will use rubberized asphalt. Possible end-uses include sports, recreational, and feedlot surfaces; soil improvements; and oil spill cleanup.
- Locally, shredded tires are currently not recycled. Recycling opportunities for this product will require investigation and development if this program is pursued as an alternative to incineration. The SCWMA will monitor state activities in the area of tire shred markets development and will use identified options if they are found locally suitable.

##### **White and Brown Goods**

- Opportunities for reuse, repair, and donation will continue to be included in the annual Recycling Guide.
- Scrap metal recovered from unrepairable white/brown goods will be sold to local scrap metal processors.
- Hazardous materials will be collected and properly disposed.

##### **Wood Waste**

- Dimensional lumber and other wood will be recycled and reused as lumber or chipped and distributed to area residents/businesses or to contracted industrial facilities as fuel.
- Reusable furniture will be resold or donated to new users.

<b>Table 4-34: Responsible Entities for Special Waste Programs</b>		
Program	Responsible Party	
	Program Management and Data Collection	Evaluation and Reporting
Construction and demolition debris	DTPW	SCWMA
Tire management	DTPW	SCWMA
White and brown goods	DTPW	SCWMA
Wood waste recovery	SCWMA	SCWMA

#### 4.6.6.2 Required Tasks

For each special waste program, specific tasks have been identified at a level of detail that is adequate for establishing a work plan, allocating hours, and budgeting (Table 4.35). To clearly define the roles to be taken, the responsible entities are noted for each task. In addition, the implementation date and costs of each task are provided.

#### 4.6.6.3 Schedules and Funding

Table 4.35 is the implementation schedule for the special waste programs.

Tipping fees are the main funding source for the special waste programs operated by the DTPW. A tipping fee surcharge is the funding source for the wood waste processing program and all special waste education efforts.

### 4.6.7 MONITORING AND EVALUATION

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 regulations outlines the requirements of the monitoring and evaluation including identifying the evaluation criteria, frequency of the monitoring, entities responsible for evaluation, and contingency measures to be implemented if programs do not fulfill the expectations.

#### 4.6.7.1 Data Needs

The following data will provide a base for comparing projected diversion of the materials against the actual tonnages. The comparison will then indicate the effectiveness of the diversion program.

##### Construction and Demolition Debris

Once a contractor is hired to sort C&D loads at the Central Disposal Site, data needs for monitoring the construction and demolition debris program include:

- Monthly reports from the contractor including actual tons for each material type diverted, material ground for ADC, and the residue landfilled.

##### Tires

Data needs for monitoring the tire program include:

- Actual numbers of tires disposed of at the County transfer stations and the Central Disposal Site

- Percentages of each method of tire reuse (i.e., retreads, civil engineering projects, etc.).
- Percentage of tires processed into crumb rubber.

### **White and Brown Goods**

Data needs for monitoring the white and brown goods program include:

- Monthly reports from the contractor operating the material reuse and recovery centers including estimates of reusable brown goods sold and tonnage of scrap metal collected.
- Number of white goods accepted at the solid waste facilities.

### **Wood Waste Recovery**

Data needs for monitoring the wood waste recovery program include:

- Estimates of quantity and type of wood waste generated including furniture, tree stumps, and lumber
- Actual tonnages of wood waste chipped for mulch and fuel.
- Actual tonnage of wood waste used for ADC.
- Identification of end-user groups/markets.

#### **4.6.7.2 Monitoring Techniques and Programs**

The specific monitoring activities to evaluate the special waste programs are designed to obtain data useful in measuring the success of the special waste programs both quantitatively and qualitatively and 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.

1. Construction and Demolition Debris: Program monitoring will be performed using written records in the form of reports and invoices provided by the contractor to track the amount of material diverted from landfill. Actual tonnages will be included in the AB 939 Annual Report to the CIWMB.
2. Tires: Program monitoring will be performed using written records in the form of reports and invoices provided by the contractor to track the amount of material diverted from landfill. In addition, the contractor will provide annual estimates of how tires collected in Sonoma County were reused, recycled and otherwise processed for proper disposal. Actual tonnages will be included in the AB 939 Annual Report to the CIWMB..
3. White and Brown Goods: Program monitoring will be performed using written records in the form of reports and invoices provided by the contractor operating the material reuse and recovery centers to track the amount of material diverted from landfill. In addition, DTPW records at the solid waste facilities will be used for tracking the numbers of appliances received. Actual tonnages will be included in the AB 939 Annual Report to the CIWMB.
4. Wood Waste: Program monitoring will be performed using written records in the form of reports and invoices provided by the contractor to track the amount of material diverted from landfill. In addition, DTPW records at the solid waste facilities will be used for tracking the tons of wood waste received. Actual tonnages will be included in the AB 939 Annual Report to the CIWMB.

#### **4.6.7.3 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. The criteria should help identify areas where improvements are required. The criteria are described below.

- Were the anticipated special waste diversion objectives attained?
- Did the responsible entities execute the tasks required?
- Were the tasks implemented on schedule?
- Were all recovered materials successfully marketed/used?
- Is the cost per diverted ton within reason?
- 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?

Each criterion will be applied to each special waste activity: construction and demolition debris, white and brown goods recovery, waste wood recovery, and tire management. Contingency measures will be considered for those criteria that receive negative responses. Section 4.6.7.6 describes those contingency measures.

#### **4.6.7.4 Parties Responsible for Monitoring**

Programs implemented using a regional approach will be managed and monitored by the SCWMA and will reflect the generation and diversion of the special wastes. Programs at the solid waste facilities will be management and monitored by the DTPW. Table 4-34 shows the division of responsibility between the two agencies.

#### **4.6.7.5 Funding Requirements**

The cost of monitoring and evaluating the special waste programs is determined by the amount of staff time committed to the project. An estimate is five to eight percent of a staff person's time each year could be required. This would cost approximately \$1,500 to \$5,100 per year.

#### **4.6.7.6 Contingency Measures**

Not only will the monitoring and evaluation process identify programs that do not meet their goals, but when programs do meet the goals, the process can pinpoint areas that can be improved beyond the established goals. Contingency measures to improve special waste programs are described below.

1. If the special waste diversion objectives are not attained, the County will consider implementing the following:
  - Increase economic incentives by adjusting disposal rates for specific special wastes.
  - Request the SCWMA to increase the education program in terms of frequency and/or number of targets.
  - Revise objectives to reflect more realistic goals.
2. If required tasks are not executed by the responsible entities, the County will consider implementing the following:
  - Revise job and task descriptions.
  - 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 implementing the following:
  - Examine factors affecting program implementation.
  - Reevaluate County staffing adequacy.

- Revise job and task descriptions.
  - Revise implementation schedule as necessary.
  - Identify reasons for lack of private-sector participation.
4. If markets/end-users prove inadequate, the County will consider requiring contractors to:
- Evaluate markets 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 and advertising.
  - Investigate marketing and coordination with other jurisdictions to improve the sales of materials.
5. If markets/end-users prove inadequate, the SCWMA will consider:
- Increasing education and promotion.
  - Investigating jurisdictional procurement policies to support markets.
6. If the cost per diverted ton is not within a reasonable range, the County will consider implementing 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.
7. If some aspect of the special waste program does not meet local, state, or federal regulations, the County will consider implementing the following:
- Identify the problems in materials and programs.
  - Correct problems to meet local, state, and federal regulations, as needed, including termination of program.
8. If hazard minimization of white and brown goods does not occur prior to disposal or shredding, the County will consider implementing 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 contractor responsible for dismantling the hazardous elements prior to disposal.
  - Monitor program more closely and/or more frequently, perhaps through coordination with the Sonoma County Environmental Health Department.

Table 4-35: Implementation Schedule for Special Waste Programs

PROGRAM AND IMPLEMENTATION TASK	RESPONSIBLE ENTITY	2000				2001				2002				2003				2004				2005				2006				2007				2008			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
SPECIAL WASTE																																					
Construction and Demolition Debris Program																																					
Evaluate additional landfill bans on C&D materials	DTPW											X																									
Analyze a separation surcharge for debris boxes and other loose loads containing banned materials	DTPW											X																									
Create a C&D separation program to be operated by a private contractor at the Central Disposal Site	DTPW											X																									
Educate permit staff, developers and the public	DTPW												X																								
Tire Program																																					
Continue existing collectin program at all solid waste facilities	DTPW																																				
Maintain contractor agreement to market tires	DTPW																																				
White and Brown Goods Program																																					
Educate public about repair, resale and donation opportunities	SCWMA																																				
Educate public about material reuse and recovery operations	SCWMA																																				
Remove hazardous material from items designated as scrap metal and bale for market	DTPW																																				
Wood Waste Recovery Program																																					
Separate material suitable for repair, reuse, and resale	SCWMA																																				
Separate material for chipping as landscape and/or soil amendment	SCWMA																																				
Educate public on reuse program and availability of landscape products	SCWMA																																				
Monitoring and Evaluation	SCWMA																																				

X - Designates the initiation of a task. Shaded bars indicate the continuation of the task and/or program.

Note: Years are broken into quarters designated by 1,2,3,4.