

# **ALAMEDA COUNTY DISASTER WASTE MANAGEMENT PLAN**

Prepared by

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with assistance from

**EMCON**

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## 1 INTRODUCTION

This Alameda County Disaster Waste Management Plan (Disaster Plan) is an important resource document to be used when responding to solid waste management issues related to disasters. These disasters could include earthquakes, fires, floods, accidents, or civil unrest, all of which have the potential to generate large amounts of debris. Most disaster debris management activities are implemented at the local level. This Disaster Plan presents methods by which disaster debris management can be coordinated countywide in order to achieve maximum diversion from landfilling.

The following presents background information about the Disaster Plan, its purpose, and the Alameda County Waste Management Authority's (Authority's) role in its development and implementation.

### **Purpose of the Disaster Plan**

The purpose of the Alameda County Disaster Plan is to develop a coordinated, countywide approach for managing disaster-related debris generated in Alameda County. By planning ahead, disaster-related waste can be managed in the most environmentally sound manner possible, maximizing source reduction and recycling options and minimizing the land disposal of this material.

### **Disaster Plan Development**

This Disaster Plan is an outgrowth of the Authority's Countywide Integrated Waste Management Plan (CoIWMP), which established a policy for promoting contingency plans for materials recovery facilities and compost facilities within Alameda County. To implement this policy, the Authority directed its staff to prepare this Disaster Plan.

This Disaster Plan was developed using information from a variety of sources, which are listed at the end of this document (see References). These documents are available for use in the Authority's reference library.

One of the key references was an early draft of the California Integrated Waste Management Board's (CIWMB's) document entitled The Integrated Waste Management Disaster Plan. The CIWMB's plan is a "how-to" document that assists local governments in planning for disaster debris and in writing local disaster debris management plans. The CIWMB's document is strongly recommended for those cities developing their own jurisdiction-specific disaster debris management plans.

Another valuable reference is the California Governor's Office of Emergency Services (OES's) Earthquake Recovery, A Survival Guide for Local Government. This "survival guide" provides practical advice for local authorities who are responsible for coordinating

their communities' recovery. Although the survival guide focuses on earthquake recovery, much of the advice is applicable to any sort of disaster event.

## **About The Alameda County Waste Management Authority**

The Authority is an independent agency established in 1976 to provide waste management planning and programs in Alameda County. The Authority's mission is to achieve the most environmentally sound waste management program for the people of Alameda County. Its 17-member governing board includes representatives of the County Board of Supervisors, all fourteen cities in the county, and two sanitary districts that primarily serve unincorporated areas.

In addition, the Authority, along with the Alameda County Source Reduction & Recycling Board (Recycling Board), will provide ongoing technical assistance to its member agencies, county residents, and businesses about alternatives to landfilling disaster-generated debris.

## **Countywide Disaster Debris Goals, Objectives, Policies, and Implementation Strategy**

The CoIWMP that was adopted on April 24, 1996, includes goals, objectives, and policies that address all waste streams generated in Alameda County. Disaster-generated debris materials are included in these waste streams.

The following strategies, which are focused on diverting disaster debris, are intended to assist in implementing the adopted CoIWMP. Each strategy description is followed by the associated CoIWMP goal, objective, and policy that is being implemented.

### **Disaster Debris Implementation Strategies**

- The quantity of disaster-related debris that is diverted and disposed of will be measured and reported to the Authority. (Goal 2, Objective 2.1, Policy 2.1.4)
- The repair of damaged structures is preferred over demolition. (Goal 2, Objective 2.2, Policy 2.2.1)
- Disaster debris diversion will be promoted in a "Special Recycling" campaign (Goal 2, Objective 2.3, Policy 2.3.1)
- For the replacement of an existing structure damaged in a disaster, the use of disaster debris will be promoted for its reconstruction (Goal 2, Objective 2.6, Policy 2.6.1)
- The Authority will participate in the annual Emergency Operations Center (EOC) Annual Functional Exercise in order to increase public awareness about disaster debris management issues (Goal 4, Objective 4.1, Policy 4.1.1)

- The Authority will adopt the *Agreement for Participation in Alameda County Operational Area Emergency Management Organization* and work cooperatively with the other parties to the agreement to provide technical assistance in finding ways to divert disaster debris from landfills (Goal 4, Objective 4.4, Policy 4.4.1)

## **Content of the Disaster Plan**

The remainder of this plan is divided into the following sections:

- **Section 2 -- Potential Disaster Scenarios.** This section discusses the types of disasters that may be faced by communities in Alameda County and the types of debris these disaster may generate.
- **Section 3 -- Local Resource Inventory.** This section identifies the agencies, organizations, and businesses that may be available to assist in disaster recovery efforts.
- **Section 4 -- Local Issues.** Local issues, such as existing policies, ordinances, resolutions, contracts, or franchise agreements may affect disaster debris recovery efforts. These issues are discussed in this section.
- **Section 5 -- Siting Criteria.** After a disaster, it may be necessary to establish temporary or long-term sites for debris storage, processing, or transfer. This section identifies the criteria that should be considered when selecting these sites.
- **Section 6 -- Sample Documents.** This section provides jurisdictions with sample language for resolutions, ordinances, or contracts that would assist in the diversion of disaster debris.
- **Section 7 -- Education and Public Information.** This section outlines the plan for developing a coordinated, countywide education and public information program.
- **Section 8 -- Training and Workshops.** The needs for pre-disaster training and information sharing sessions for the parties involved with disaster debris removal (e.g. emergency coordinators, public works departments, recycling coordinators, haulers, processors, landfills, etc.) are discussed in this section.
- **Section 9 -- Funding and Associated Requirements .** This section identifies the basic accounting and recordkeeping requirements needed for jurisdictions to qualify for reimbursement by state or federal emergency funds for disaster debris diversion.

## 2 POTENTIAL DISASTER SCENARIOS

Alameda County may be susceptible to a variety of disasters, including earthquakes, fires, floods, and civil unrest. These disasters could generate a significant amount of debris that could severely impact the existing solid waste collection, processing, reuse, and disposal system.

Each type of disaster will produce a different type of debris. For example, a flood would typically generate large amounts of sandbags while an earthquake would probably not.

The following is a list of materials typically generated after disasters.

**Table 2-1**  
**Typical Disaster Debris**

Concrete	Wood
Asphalt	Glass
Metals	White goods (e.g. large appliances such as refrigerators, washers and dryers)
Yard waste	Brown goods (e.g. small appliances such as microwave ovens and televisions)
Plastic (including sheeting and water containers)	Bricks
Sandbags	Household hazardous waste
Soil and rock	Furniture
Wallboard	Personal belongings

A brief discussion of the various types of disasters, along with a description of the debris associated with each is provided below.

### **Earthquakes**

**Disaster Potential.** Alameda County is in a seismically active area. Several active and potentially active fault systems have been mapped within the county boundaries, and other major fault systems (e.g. the San Andreas) are nearby. Ground rupture, shaking, or failure (e.g. liquefaction, landsliding, or lurch cracking) associated with earthquake faults can cause damage to personal property and public facilities. In addition, secondary damage from fires and explosions could result from disruption of utility systems. Damage to key transportation corridors, such as Interstates 580 and 680, could be



extensive in the event of a major earthquake due to surface rupture, landsliding, or subsidence.

**Types and Quantities of Debris Generated.** Post-earthquake debris composition evolves with time. Initially, the focus will be on removing debris from the streets to allow access. If this material is from damaged structures, it is likely to contain personal belongings, valuables, and mementos. OES advises that victim reclamation of their personal property should be accommodated as a priority. For damaged structures that are still habitable, residents and businesses will usually begin soon after the main shock to cleanup broken glass and ceramics, spilled foods and liquids, and broken furniture and appliances. Later, demolition material (including concrete, asphalt, bricks, gypsum wallboard, metal, and soil) comprises the majority of the disaster-related waste stream. Household and other hazardous wastes may be mixed with any earthquake-related debris.

The cleanup process can be quite lengthy, and disaster debris can still be generated months, or even years, after the event. Residents and businesses must often negotiate with insurance carriers, FEMA, or the Small Business Administration before beginning the demolition and rebuilding efforts.

The quantity of debris that will be generated by a major earthquake affecting the urbanized areas of Alameda County is estimated to be quite large (on the order of millions of tons). A substantial number of structures within the County were built before local building codes required earthquake bracing. Of these, small wooden structures might experience falling chimneys, breaking glass, falling furniture, and cracked or falling plaster, rather than full-scale destruction. Unreinforced brick, stone, or block buildings (common in the older, urbanized areas of Berkeley, Oakland, and Alameda) are considered the most damage prone. Light steel frame and glass buildings with reinforced concrete roofs could suffer severe damage or collapse due to weak connections. The principal effects of a major earthquake on the streets and highways system would include localized earth failures due to surface rupture, landslide, or subsidence, which could cause bridge or elevated structure collapse or damage. This structural damage would generate significant quantities of demolition material, and may impede access to existing landfills, transfer stations, and material recovery facilities.

## **Fires**

**Disaster Potential.** Developed areas of Alameda County are susceptible to urban fires and undeveloped and urban fringe areas are susceptible to wildfires. Following an earthquake, urban areas may be even more susceptible to fires due to damaged gas and water lines and disrupted transportation routes, which restrict emergency vehicle access.

**Types and Quantities of Debris Generated.** Urban fires leave ash; charred lumber, wood, and vegetation; smoke damaged furniture; metal from burned vehicles or structures; bricks; concrete; soil; and foundations. Wildfires can also destroy structures, resulting in a similar waste stream. The State Office of Emergency Services estimated that approximately 1,600 acres and over 3,300 structures were destroyed in the October 1992

Oakland Firestorm. A subsequent study indicated that cleanup efforts from this fire resulted in the collection of over 90,000 tons of debris material. Of this, approximately 30,000 tons were handled as potentially recyclable, which consisted of (by weight) 42% concrete, 21% wood, 37% metal. In addition, 2,000 burned automobiles averaging 1 ton each were recycled, and more than 700 trees were removed, chipped, and sold as fuel.

## **Floods**

**Disaster Potential.** Flood hazards in Alameda County can be grouped according to three main causes:

1. Resulting from excessive runoff
2. Resulting from dam and/or reservoir failure
3. Resulting from tsunamis (seismic sea waves)

Excessive runoff flooding has largely been eliminated in the urban areas of the County through flood control projects.

There are 29 dams in Alameda County. Most of the combined impounded water is contained by the four largest dams: Calaveras, Del Valle, James H. Turner, and Upper San Leandro. Failure of Calaveras Reservoir would flood portions of Sunol Valley, Newark, Union City, Hayward, and Fremont. Failure of Del Valle Dam would inundate portions of Livermore Valley; Sunol Valley; Niles Canyon; and extensive portions of the cities of Pleasanton, Fremont, Newark, and Union City. Failure of the James H. Turner Dam, which contains the San Antonio Reservoir, could flood portions of the Sunol Valley, Niles Canyon, City of Hayward, Fremont, and Union City. Failure of the Upper San Leandro Dam would flood portions of southern Oakland and San Leandro. Failure of the smaller dams would result in localized flooding, primarily confined to the flood control channels.

Tsunamis are long water waves generated by sudden displacement under water, commonly associated with earthquake movement along a submerged fault. The United States Geological Survey has estimated that San Francisco Bay will experience a 20-foot high tsunami at a frequency of every 200 years. The wave height would be reduced by half by the time it reaches the Albany/Berkeley shoreline and would decrease further as it travels south. All cities in Alameda County that front the Bay would be subject to some level of inundation from a tsunami of this magnitude.

**Types and Quantities of Debris Generated.** Flooding causes damage to structures and personal belongings, and can generate large volumes of downed vegetation, mud and soil, household debris (e.g. appliances; furniture; rugs, carpet, and padding; and HHW), sandbags, plastic sheeting, and demolition debris.

## **Civil Unrest**

**Disaster Potential.** Any populated area may be susceptible to civil unrest.

**Types of Debris Generated.** Civil unrest can result in property damage from fires or looting. Ash and demolition debris, along with damaged personal belongings are typical waste streams.

### 3 LOCAL RESOURCE INVENTORY

This section provides information about locally available resources that may be called upon to assist in diverting debris generated by a disaster. It begins by describing the Standardized Emergency Management System (SEMS), and follows with descriptions of the agencies, organizations, and businesses that may be available to assist with disaster debris management. For ease of reference, lists of the available resources are provided at the end of this section.

#### **Standardized Emergency Management System (SEMS)**

SEMS is a management system that provides an organizational framework and guidance for operations at each level of California's emergency management system. It provides the umbrella under which all response agencies may function in an integrated function. The objective of SEMS is to improve the coordination of state and local emergency response. **All local governments must use SEMS in multi-jurisdictional or multi-agency emergency responses to be eligible for state reimbursement of response-related personnel costs.**

SEMS is comprised of four elements:

*Incident Command System* - A field-level emergency response system based on management by objectives.

*Multi/inter-agency coordination* - Affected agencies working together to coordinate allocations of resources and emergency response activities.

*Mutual aid* - A system for obtaining additional emergency resources from non-affected jurisdictions.

*Operational Area concept* - The county and its subdivisions to coordinate damage information, resource requests, and emergency response.

SEMS recognizes five organizational levels:

*Field* - On-scene responders

*Local* - City, county, or special district

*Operational Area* - Manages and coordinates all local governments within the county

*Regional* - Manages and coordinates information and resources among operational areas

*State* - Statewide resource coordination integrated with federal agencies

SEMS also establishes five functions:

*Management* - Provides the overall direction and sets priorities for an emergency

*Operations* - Implements priorities established by management

*Planning/Intelligence* - Gathers and assesses information

*Logistics* - Obtains the resources to support the operations

*Finance/Administration* - Tracks all costs related to the operations

In Alameda County, the Operational Area was established by the January 1995 *Agreement for Participation in Alameda County Operational Area Emergency Management Organization* (Agreement). A copy of this Agreement is provided at the end of this section. According to the Alameda County Office of Emergency Services (the Sheriff's Department), all the cities in the county and the county are participants in this Agreement.

The Agreement establishes an organizational structure for disaster response for the County of Alameda, cities, special districts, and other public benefit non-profit corporations (e.g. the American Red Cross) that participate in the Agreement. The Agreement forms a partnership for a systematic approach for exchanging disaster intelligence, mutual aid requests, and resource requests in emergencies. It also provides emergency preparedness on a day-to-day basis through cooperative training and exercise activities. It establishes a primary contact point during an emergency in Alameda County for sharing disaster intelligence among local agencies and between the Operational Area Emergency Management Organization and state and federal agencies requesting information.

The Operational Area Emergency Management Organization assists the participating parties in sharing resources before, during, and after an emergency to prepare for, respond to, and recover from disasters that strike Alameda County. The Agreement specifies that the *Alameda County Emergency Operations Plan* is the primary method and criteria used to conduct Operational Area Emergency Center activities.

The *Emergency Operations Plan* includes a description of the various functional responsibilities for County departments. **The County Public Works Agency is responsible for coordinating multi-jurisdictional disaster debris removal within the Alameda County Operational Area.**

## **Resource Inventory**

**Local Governmental Agencies.** Each city and the county are responsible under the Integrated Waste Management Act of 1989 (AB 939) for planning and implementing waste management programs at the local level. In addition, each of these local entities is responsible for providing emergency response services (such as fire and police) within their jurisdictions and for coordinating disaster debris cleanup. Table 3-1 provides a list of the local agencies and their departments who are responsible for a) solid waste management and b) disaster debris recovery and cleanup. It is important to note that sharing of resources among local jurisdictions following a disaster should be coordinated through SEMS in order to be eligible for state reimbursement.

**State and Federal Agencies.** State and federal agencies may provide technical assistance, reimbursement of funds expended on disaster debris material, or in the case of Caltrans, may manage large amounts of publicly owned lands that could be used as temporary storage or processing sites for disaster debris. The California Integrated Waste Management Board (CIWMB) has developed *The Integrated Waste Management Disaster Plan*, which provides guidance and assistance to the disaster preparedness planning efforts of local governments (early drafts of the CIWMB's documents were used to develop this Disaster Plan). A list of state and federal agencies is provided in Table 3-2.

**Disaster-Debris Service Providers.** Following a disaster, there may be a need to contract with demolition/excavation contractors, debris box haulers, or others to assist in the recovery process. Establishing contingency contracts before the disaster strikes is advisable, and including a requirement for material recycling versus landfilling is important (see Section 6 for sample contracts). By pre-establishing contracts, city-specific requirements for disadvantaged business enterprises (i.e. minority-, women-, or disabled veteran-owned) can be considered. In addition, the pre-approved contractors can receive pre-disaster training in techniques (e.g. soft demolition) to enhance debris recovery and diversion.

Tables 3-3 and 3-4 provide a preliminary list of these providers in Alameda County.

**Potential Sites for Disaster Debris Management.** Several potentially available staging, storage, or processing sites for disaster debris have been identified and are listed in Table 3-5. These sites include the existing landfills and transfer stations in the County. In addition, some County-owned land may be available for use as temporary disaster debris sites. Local jurisdictions are encouraged to identify other sites within their own boundaries. Suggested siting criteria are provided in Section 5 of this document.

**Other Countywide Projects and Programs.** As a leader in innovative solutions to solid waste management issues, the Alameda County Waste Management Authority and Source Reduction and Recycling Board sponsor several other projects and programs that focus on the same waste streams as can be expected from a disaster. These projects and programs are another valuable resource for debris diversion information. The projects and programs that are the most relevant to disaster debris diversion are listed below. A brief description of these projects and programs is provided in Table 3-6.

- Construction and Demolition (C&D) Recovery Capacity Expansion
- Resourceful Building - Demonstration Projects (demonstration projects focused on waste reduction, reuse, recycling, and recycled-content products)
- Household Hazardous Waste (HHW) Program
- Recycling Hotline

- Library/Internet
- Building for Tomorrow (a reuse and recycling directory for C &D material)
- Green Spec (guideline specifications for environmentally considered building materials and construction methods)
- Business Outreach Program (assists businesses develop and implement diversion programs)

**Additional information about these projects can be obtained by calling the Authority at (510) 614-1699.**

In addition to the Authority's and Recycling Board's projects and programs, the Alameda County Volunteer Center could be another valuable resource for disaster debris diversion coordinators. The Volunteer Center maintains a database of potential volunteers and volunteer opportunities and is responsible for processing "emergent" volunteers who offer help after a disaster. The Volunteer Center expects approximately 50,000 emergent volunteers to respond after a major earthquake in the area.

With proper training, volunteers could be very helpful in assisting with disaster debris diversion programs. The use of volunteers to assist in implementing programs is discussed in Section 8, Workshops and Training. **The Volunteer Center can be reached at (510) 419-3970.**

**Table 3-1  
Local Agencies Disaster Debris Responsibilities**

<b>Jurisdiction</b>	<b>Solid Waste Programs</b>	<b>Disaster Debris Removal*</b>	<b>Disaster Cost Recovery/Financing</b>
City of Alameda	Public Works Department of Waste Management and Recycling (510) 748-4650	Public Works Maintenance Services (510) 748-4520	Public Works Department (510) 748-4550
City of Albany	Community Development Department (510) 528-5766	Public Works	Finance Director/Treasurer
City of Berkeley	Public Works Department, Solid Waste Management Division (510) 644-6276	Public Works Department (510) 644-6622	
City of Dublin	(510) 833-6655		
City of Emeryville	Public Works Department (510) 596-4306	Public Works Department (510) 596-4306	Finance Department
City of Fremont	Development and Environmental Services Division (510) 494-4740		Finance Department
City of Hayward	Department of Public Works, Utilities Division (510) 293-5036	Department of Public Works	Purchasing Services
City of Livermore	Office of the City Manager (510) 373-5143	Public Works Department (510) 373-5220	Finance Department
City of Newark	Community Development Department (510) 790-7242	Community Development Department	Finance Department
City of Oakland			



**Table 3-1, continued**

City of Piedmont	Department of Public Works/Planning (510) 420-3063	Office of General Services	
City of Pleasanton	Office of the City Manager (510) 484-8277	Engineering and Public Works	Finance Department
City of San Leandro	Public Works Service Department (510) 577-6026	Public Works Department	Finance Department
City of Union City	City Manager's Office (510) 471-3232	Public Works Department	Finance Department
Alameda County	Planning Department - Consultants & General Services (510) 670-6516	Department of Public Works	County Administration (510) 272-6984

\*Note: None of the emergency operations plans identified disaster debris diversion as a specific job assignment.

**Table 3-2  
State and Federal Agencies**

<b>State Agencies</b>	<b>Role in Disaster Debris Management</b>
California Integrated Waste Management Board, Disaster Response Unit	Provides guidance and assistance to the disaster preparedness planning efforts of local government and provides advisory information regarding solid and household hazardous waste after disasters
Governor's Office of Emergency Services	Coordinates debris clearance performed by state agencies; assists in the preparation of and receives, processes, and forwards applications for federal grants for cost of debris clearance
California Conservation Corps	Provides personnel and/or equipment to support emergency debris clearance and other related support
California Highway Patrol	Assesses damage to highways and roads, clears obstructing vehicles, closes dangerous routes, implements traffic control in and around affected areas, assists Caltrans with route recovery priorities
Department of General Services	Clears debris from State-owned buildings
Caltrans	Assesses damage to state highways, establish route recovery priorities, remove debris from state highways, make repairs and establish detours, assist California Highway Patrol with traffic control regulation
Department of Water Resources	Provides flood protection, flood control, and flood fighting support; removes debris from and continues to operate the state's flood control works

**Table 3-2, continued**

<b>Federal Agencies</b>	<b>Role in Disaster Debris Management</b>
Federal Emergency Management Agency (FEMA)	Negotiates disaster relief efforts with the State Office of Emergency Services, and provides reimbursement for approved disaster response activities
U.S. Army Corps of Engineers (USACE)	Assists in flood emergency preparation, flood fighting, flood control, and emergency debris clearance
U.S. Environmental Protection Agency (USEPA)	Provides emergency response and technical assistance relating to releases of hazardous substances.

**Table 3-3  
Demolition Contractors**

ABC Construction	(510) 533-1076
ABDO S. Allen Co., Inc.	(510) 569-2070
AC Bobcat	(800) 559-3331
Allstate Excavating & Demolition	(510) 231-0208
Betchart Ludwig, Inc.	(510) 656-1149
Brian Gates Demolition	(510) 845-6272
Butterick Enterprises	(408) 292-5687
BVD, Inc.	(415) 453-9492
C & P Tree Service	(510) 531-5171
C.A. Cola	(510) 827-0343
Cal Neva Excavators	(510) 524-6425
Cal West Concrete Cutting, Inc.	(510) 656-0253
Caldwell Building Wreckers	(415) 550-6777
Charles Campanella, Inc.	(510) 536-4800
Cirimele Construction	(510) 881-8467
Cleveland Wrecking Co.	(415) 824-1411
Demcon	(510) 481-8022
Emerson & Son Enterprise	(510) 886-3794
Evans Brothers	(510) 443-0225
Ferma Corporation	(415) 961-2742
Ferreira Hauling	(510) 528-8530
Fontan Building Wrecking	(510) 836-3366
G & R Enterprises	(510) 537-1481
Hassett Construction	(510) 794-1415
Hazardous Materials Contracting Corp	(510) 261-1900
Heim Brothers	(510) 229-1610
Hoxie Development Co.	(408) 262-5549
Iconco	(510) 261-1900
Jamco Concrete Cutting, Inc.	(510) 272-9161
Joe Heim, Inc.	(510) 829-1803
Joe Mattioda Demolition	(510) 234-9911
L.C. Rudd & Son	(707) 554-8282
MidCoast Transportation	(510) 449-8211
Penhall Company	(510) 357-8810
Plant Reclamation	(510) 233-6552
R & B Equipment	(510) 782-3774

R.C. Knapp	(510) 233-0346
Roldan Construction Co.	(510) 490-1395
Stomper	(415) 969-2377

**Table 3-3, continued**

Sweatt Demolition	(408) 268-3055
Thomas D. Eychner Co., Inc.	(510) 655-8000
Tom Daniels Excavation	(510) 820-3558
U.C. Haulers & Diso Baltazar	(510) 528-4938
U.S. Hauling	(510) 524-4777
Western, Inc.	(510) 451-3393
Yelton Company	(510) 827-0931
Zaccor Corporation	(415) 363-2181

References:

National Association of Demolition Contractors  
Pacific Bell SMART Yellow Pages

**Table 3-4  
Debris Box Providers/Haulers**

<b>Name</b>	<b>Phone Number</b>
A1 Hauling & Cleanup Service	697-5334
Able Hauling	(415) 452-1849
Alarcon Bohm Services	893-4405
Angel's Clean-up Service	790-2922
Arthur Young Debris Removal	568-9465
Baltazar Hauling	527-6649
Berkeley Sanitary Service	232-5872
Berkeley, City of	644-6465
Biagini Waste Reduction Systems	(800) 457-6007
Brennan's Hauling	428-5464
California Cleansweep	832-5512
Custom Tree Care	443-8746
D&C Debris Box & Hauling Dorp	568-9449
DC Hauling	849-9727
East Bay Disposal Co.	797-0440
Elite Tree Service	569-5814
Eloby Cleophas	533-4208
Excellent Excavations	601-7550
Ferreira Hauling	528-8530
G & C Paper Recycling & Salvage	843-7025
Handy Hauling	428-5498
Handy-Can of Berkeley	540-1905
Harris Hauling	582-1596
Have Dump Will Travel	794-3543
Have Truck Will Haul	797-0977
Hulk's Hauling	652-7673
Joe Mattioda	525-3341
John's Gardening Service	530-2283
L & K Debris Box Service Inc.	441-9432
Livermore Dublin Disposal Co.	447-1300
M & J Hauling & Delivery	530-4447
Mack & Sons	635-1079
Major Salvage Co.	521-0303
Nimco Landscape Service	606-0128
Oakland Scavenger Co.	613-8720, 537-5500 or 562-1364
Otterstad's Brush Clearing Service	524-4063

Paul Haul's Transport	462-5159
Pleasanton Garbage Service Inc.	846-2042
Pleasanton Garbage Service, Inc.	846-2042



**Table 3-4, continued**

R C Stump Removal	786-2682
Ray Simmons Trucking Co.	636-4142
Red Rock Hauling and Roof Company	548-3873
RJ Hauling Service	521-8190
Ron's Tree Service	538-3234
San Leandro Disposal Inc.	357-7282
SCC Wood Recycling	625-9372
Steve's Hauling	569-4854
Tom's Hauling Service	835-6014
UC Haulers & Dilso Baltazar	528-4938
Valley Waste Management	935-8900
Van Deusen Hauling	339-1019
Waste Management of Alameda County (WMAC)	613-8720
Waste Resource Technologies Inc.	(415) 822-2175

Reference: Pacific Bell SMART Yellow Pages

**Table 3-5  
Potential Storage/Transfer/Processing Sites In Alameda County**

<b>Facility Name</b>	<b>Site Address</b>	<b>Owner &amp; Telephone</b>
<b><i>Landfills</i></b>		
Tri-Cities Recycling and Disposal Facility	7010 Auto Mall Parkway, Fremont	Waste Management Inc. of Alameda County (WMAC) (510)657-2425
Vasco Road Sanitary Landfill	4001 North Vasco Road, NE of Livermore	Browning Ferris Industries (510) 447-0491
Altamont Landfill	10840 Altamont Pass Road	Waste Management Inc. of Alameda County (WMAC) (510) 449-6349
<b>Transfer Stations</b>		
Davis Street TS/MRF	2675 Davis Street, San Leandro	WMAC (510)638-4327
Berkeley Transfer Station	Second & Gilman, Berkeley	City of Berkeley (510) 644-8894
Pleasanton	3110 Bush Road, Pleasanton	Pleasanton Garbage Service (510)846-2042
<b>County-Owned Lands</b>		
Altamont Area Station	400 ft. either side of the old Southern Pacific right-of-way, on Altamont Pass Road, just NE of Dyer Road	Alameda County (Real Estate Division) (510) 670-5585
Flood Control Silt Sites	Northwest of West Winton Road in Hayward, and North of the west end of Grant Street, San Leandro	Alameda County Flood Control District (contact: Alameda County Real Estate Division) (510) 670-5585

**Table 3-6  
Other Countywide Projects and Programs**

<b>Project</b>	<b>Description</b>	<b>Applicability to Disaster Debris</b>
Construction and Demolition (C&D) Recovery Capacity Expansion	Researches alternative approaches and recommended strategies to expand the recovery capacity in Alameda County for mixed construction and demolition debris.	Project could provide up-to-date information on the status of C&D recovery capacity in and near Alameda County
Household Hazardous Waste (HHW) Program	Includes the acquisition and development of three permanent HHW collection facilities and countywide HHW public education information campaigns.	Disasters typically result in an increase in the amount of HHW that needs to be managed.
Recycling Hotline	Offers information on reuse and recycling to county residents, businesses, and member agencies through a live operator and data tracking system.	Hotline operators could provide up-to-date information about diversion options for all types of disaster debris.
Library/Internet	Maintains a reference library of information related to waste diversion and provides electronic access to waste reduction information via the Internet ( <a href="http://www.stopwaste.org">www.stopwaste.org</a> )	The reference library contains background information that is useful for planning for disaster debris, and the Authority's Web page could provide up-to-date information about diversion options for all types of disaster debris.
Building for Tomorrow	Is a reuse and recycling directory for C&D material	Directory could be used as a quick reference guide to assist builders, contractors, residents, and businesses find reuse and recycling opportunities for C&D debris generated after a disaster
Green Spec	Is a set of guideline specifications for environmentally considered building materials and construction methods	Green Spec can be used by architects and engineers who are designing replacement structures.
Resourceful Building	Includes a series of construction and demolition projects employing resource-efficient techniques with a focus on waste reduction, reuse, recycling, and recycled-content products.	Results of the projects provide valuable "lessons learned" that can be applied to the post-disaster rebuilding effort.
Business Outreach	Assists businesses and institutions divert discards from landfills through technical assistance, information exchange, research and development, direct service delivery, demonstration projects, grants, and loans.	Authority and Recycling Board staff could assist businesses and institutions incorporate disaster debris diversion discussions into facilities' emergency response plans or waste diversion plans.

**(Call the Alameda County Waste Management Authority and Source Reduction and Recycling Board at (510) 614-1699 for more information about these programs)**

## 4 LOCAL ISSUES

Local issues, such as existing policies, ordinances, resolutions, contracts, or franchise agreements, may affect disaster debris diversion efforts. The cities and the county will need to examine their jurisdiction-specific conditions that may affect the ability to implement diversion programs for disaster debris. Taking steps now to overcome these identified barriers can save valuable time after a disaster.

Examples of the types of issues that should be explored are discussed below.

### Countywide Issues

After a disaster, we can expect that existing landfills may be used as storage, transfer, or processing sites for the resulting debris. Landfills can also utilize some recovered material (e.g. soil or yard waste) in their operations. As a last resort, landfills can dispose of materials for which no other higher use can be found.

One potential barrier to Alameda County landfills accepting disaster debris is contained in the CoIWMP. Policy 3.3.1 states that

“Solid waste facilities in Alameda County may only accept wastes originating within the facility watershed designated in the Alameda County CoIWMP. Disposal of material from new wastesheds at facilities in Alameda County is only allowed pursuant to, and shall only continue consistent with, terms and conditions contained in a CoIWMP amendment changing the designated watershed.”

Such a policy may pose difficulties following a disaster if certain landfills (or the routes to them) are damaged, rendering them unusable. It would be time consuming and difficult to amend the CoIWMP following a disaster. It would be preferable to modify the CoIWMP language now to allow wastesheds to shift under emergency conditions.

Another issue for landfills is that their permit conditions may restrict the activities that can take place at the site. For example, material processing may not be included in a facility’s permit, which could limit the amount of disaster debris recovery that could take place at the site. Or, the facility’s permit will restrict the amount of material that can be stored, transferred, or processed, thus limiting the amount of debris that can be brought to the site.

Under State regulations regarding emergency waivers of standards, the Local Enforcement Agency may authorize a waiver of this restriction after a disaster upon receiving a written request from the facility owner. The request must contain information about the permit terms and conditions to be waived, the remaining disposal capacity, a description of

facility-related diversion programs and on-site recycling facilities. Compiling this information after a disaster may be burdensome, so it may be preferable to do it now, or address these issues during the next permit review process.

## **Local Issues**

Some potential barriers to implementing disaster debris recovery programs include franchise or waste hauling agreements, land use ordinances, or local building codes. Examples of the types of administrative issues that could pose barriers to implementing disaster debris programs are presented below. The cities and the county are encouraged to examine their existing contracts, ordinances, and requirements and to correct any identified problems before a disaster occurs.

**Franchise or Waste Hauling Agreements.** A franchise agreement may give ownership of all waste generated within a city to the franchisee. Following a disaster, the generated wastes may exceed the franchisee's available resources. If the city identifies an alternative contractor for debris removal and diversion, there may be a conflict with its existing franchise agreement.

The Recycling Board's four-year program audit, which will be completed in mid-1997, will include a compilation of the member agencies' waste hauling agreements. Once compiled, these can be reviewed to identify potential problem areas for managing disaster debris.

**Land Use Ordinances.** Local land use ordinances can restrict the usage of a parcel or impose administratively difficult permitting requirements for changing the land use. These restrictions or requirements can pose barriers to establishing temporary storage, transfer, or processing sites for disaster debris. Each jurisdiction should evaluate its own ordinances for potential barriers.

**Local Building Codes.** A potential end use for recovered disaster debris is to use it to rebuild after a disaster. Local building codes should be examined to see if they pose barriers to use of recycled material for construction. In addition, some local building ordinances pose barriers to source reduction because they promote the replacement of damaged buildings over their repair.

## 5 DISASTER DEBRIS SITING CRITERIA

This section presents the criteria that should be considered when selecting temporary or long-term storage sites for disaster debris material. These criteria apply only to sites that will be used exclusively for managing disaster debris. Any facility that is used to manage disaster debris, but which also requires a Solid Waste Facility Permit (e.g. disposal facilities, transfer stations, or facilities for materials recovery or processing, composting, or transformation facilities), is subject to the CoIWMP Conformance Procedures and Siting Criteria. Existing solid waste management facilities and other sites in the county that could be used for disaster-related debris management were listed in Section 3.

**Table 5-1  
Suggested Criteria for Disaster-Debris Sites**

Location	Sites should be identified that are accessible to areas particularly susceptible to disasters (e.g. near urban centers, freeway interchanges)
Size	Sites should be of sufficient size to allow for the storage of disaster debris material and the safe movement of vehicles.
Compatible land uses	Sites should be identified in areas with land uses that are compatible with heavy truck traffic, dust, and noise.
Protection from additional disaster events	Sites should be situated away from known active earthquake faults, outside of 100-year floodplains, and away from areas susceptible to liquefaction, subsidence, or massive landslides.
Avoidance of environmentally sensitive areas	Sites should avoid environmentally sensitive areas such as wetlands and endangered species habitats.

The cities and the county are encouraged to identify potential sites before a disaster strikes, and to consider permitting and pre-approving the use of identified sites for disaster debris. Negotiating the lease or use of privately or publicly owned land before a disaster can also save valuable time.

## 6 SAMPLE DOCUMENTS

As part of preparing this Disaster Plan, the Alameda County Waste Management Authority assembled a collection of resolutions, ordinances, and contracts that may assist local jurisdictions in implementing city-specific disaster debris diversion plans.

Copies of these sample documents are provided in Appendix A. The content of each document is summarized below.

**Table 6-1  
Summary of Sample Documents**

<b>Document Name</b>	<b>Description</b>
Scope of Work, 1991 Oakland Hills Fire Debris Cleanup	Describes the master contract used by the City of Oakland to coordinate and oversee debris management after the Oakland Hills fire.
City of Oakland Debris Removal Permit Information	Notification issued to Oakland Hills fire victims regarding the requirement for a debris removal permit to clean privately owned property in the Oakland Hills fire damaged area.
City of Los Angeles Contractor Authorization Letter	Contract used by the City of Los Angeles to pick up, transport, and dispose of inert earthquake-related debris.
Recycle Earthquake Debris Doorhanger	Doorhanger used by the City of Los Angeles to inform residents about the recycling program for earthquake debris.
Mixed Use Facilities Contract	Contract (draft) used by the City of Los Angeles for the processing loads of mixed inert solids and demolition loads.
Unit Price Debris Removal Contract	A unit price (per full truck load) contract used by the City of Los Angeles.
Ordinance No. 1800	An urgency ordinance passed by the Town of Los Gatos after the Loma Prieta Earthquake that established the requirements for the repair, restoration, and reconstruction of damaged structures.
Ordinance No. 94-01E	An urgency ordinance of the City of Santa Clarita that established the city's abatement program for the mitigation of structural damage and debris removal.
County of Santa Cruz Home Clean-up Job Description and Release of Liability Agreement	One of the many job descriptions used by the County of Santa Cruz to manage the many volunteers who responded to the Loma Prieta earthquake ( <i>could be modified to incorporate a source separation/recycling component</i> )

## 7 EDUCATION AND PUBLIC INFORMATION

The Authority and the Recycling Board have developed extensive countywide education and information programs that complement and support the efforts of local jurisdictions. These existing programs provide a frequent and consistent message designed to familiarize people with their role in the generation, diversion, and disposal of solid wastes. After a disaster, this type of coordinated countywide approach would be appropriate for educating the public about debris diversion programs.

The Authority and the Recycling Board's education and public information programs for disaster debris will build upon the existing programs and will focus on two aspects: 1) providing advertisement of the available diversion programs and 2) educating residents and businesses involved in implementing the cleanup and diversion programs.

The countywide disaster-debris education and public information program will consist of the following:

- **Recycling Hotline.** The Authority and Recycling Board's Recycling Hotline operators will compile disaster debris diversion information from the member agencies and provide it to interested parties who call the Recycling Hotline.
- **Media Relations.** The Authority will pre-prepare generic press releases and public service announcements regarding disaster debris diversion. These generic items can then be quickly tailored after a disaster event to reflect current conditions.
- **Library/Internet.** Research information related to disaster debris diversion will be maintained in the Authority and Recycling Board's reference library. Following a disaster, the joint agencies' Web page will be updated with information specific to disaster debris diversion.
- **Disaster Debris Diversion Promotional Materials.** The Authority will prepare generic promotional materials related to disaster debris diversion that can be tailored after a disaster to reflect current conditions. The promotional materials may include doorhangers or flyers, and will reflect the primary languages spoken in the County.
- **Emergency Operations Center Annual Functional Exercise.** The Authority will participate in the County's Office of Emergency Services Annual Functional Exercise, held at the Emergency Operations Center. The Authority's objective for participating in this event is to raise the general level of awareness that debris diversion is an important aspect of disaster recovery.



## **8 WORKSHOPS AND TRAINING**

Two types of workshops and training have been identified that would enhance the countywide effort toward a coordinated approach to disaster debris diversion. The workshops would be for local agency staff, officials, and other parties who are responsible for solid waste and disaster debris planning. The training sessions would be either for demolition contractors or for volunteers who could assist the cities and the county in implementing the disaster debris diversion programs after a disaster. Each of these approaches are described below.

### **Workshops**

In preparing this disaster plan, it appears that while the Alameda County Operational Area has established a coordinated approach to “immediate” disaster response efforts (e.g. fire and rescue, law enforcement, medical services, care and shelter, public health, etc.), the longer-term issue of disaster-debris diversion has received less attention. Each city and county in California is responsible under AB 939 for its own waste management programs. Therefore, it is conceivable that each entity could develop its own approach that may not necessarily be compatible with its neighbors’. To avoid conflicts and to enhance coordination, it would be worthwhile for the member agencies to work together as they develop their individual approaches.

To facilitate inter-jurisdictional coordination during the disaster diversion planning phase, the Authority would sponsor a series of workshops for the solid waste management coordinators, the disaster debris removal coordinators, and other interested parties (e.g. haulers, solid waste facility operators) from each of the jurisdictions. The purpose would be to present the countywide objectives for diverting disaster debris, and to allow the jurisdictions to share ideas and approaches.

A key objective would be for the various entities to agree upon the basic elements of the debris management program. For example, are curbside collection programs anticipated, or will drop-off sites be established? Will source separation be required, or will mixed loads be collected? What materials will be targeted for diversion? By addressing these issues as a group, countywide educational, informational, and news media materials can be developed and distributed, which could result in cost savings due to economies of scale. In addition, residents’ confusion about different programs could be minimized, leading to less contamination of recovered materials.

### **Training**

After the Northridge earthquake, the City of Los Angeles found that its disaster-debris diversion program was extremely labor-intensive. Even though contractors were used to collect, process, and market diverted material, the City found that it needed extra

personnel to assist in source separating debris piles and to oversee and monitor the contractors' performance. The City shifted some personnel from their normal duties to the earthquake recovery program and utilized workers administered by the Employment Development Department (EDD) to help meet the demands. This approach may not be feasible for all cities.

Another approach to the need for additional personnel could be met through the use of volunteer labor. The Alameda County Volunteer Center matches potential volunteers and volunteer opportunities and is the agency that will coordinate the processing of the large pool of "emergent" volunteers that are expected to respond after a major disaster. Some of these emergent volunteers could be extremely helpful in assisting with disaster debris diversion programs. Some work assignments would require pre-disaster training, while others would not. The areas where volunteers could be utilized are described as follows:

- **Distributing doorhangers and flyers.** After a disaster, the normal means of communication (e.g. television, newspapers, radio, and telephone) can be compromised, making it difficult to spread the word about diversion programs. Doorhangers can be effective means of distributing the necessary information. Volunteers with very minimal training can be used to distribute these materials door-to-door.
- **"Master Deconstructors."** Similar to the Master Composter program, volunteer "Master Deconstructors" could be identified and trained in deconstruction or soft demolition techniques. These trained volunteers could then visit jobsites to provide instruction or educational materials to demolition contractors. This volunteer opportunity may be best suited for a service organization that would have some continuity in membership and long-term commitment to disaster debris programs. Alternatively, this program could become an extension of existing Authority or Recycling Board whereby experts in deconstruction techniques could develop training materials before a disaster and provide training to emergent volunteers after a disaster.
- **Volunteer Load Inspectors.** Minimizing cross-contamination of source-separated disaster debris is a common challenge. The City of Los Angeles found that sending out trained inspectors to preview loads before they were collected helped reduce contamination problems. It may be appropriate for trained volunteers to provide this service.

Another training opportunity would be to provide pre-disaster training to contractors and haulers who will be involved in the diversion program. By providing up-front training, there is a better likelihood that diversion programs will be implemented properly and maximum diversion rates will be achieved.

## 9 FUNDING AND ASSOCIATED REQUIREMENTS

Costs for disaster response, including debris diversion, are typically not included in most local governments' budgets. After a disaster, available reserves or discretionary funds are quickly depleted, and these unbudgeted expenses are often accompanied by a decrease in the local tax base. Therefore, most jurisdictions rely on receiving reimbursement from the state and federal government following a declared disaster. Receiving timely reimbursement for all eligible costs is an important element of the recovery process.

To maximize the eligible reimbursement, local agencies must follow stringent procedural, recordkeeping, and documentation requirements, which are too involved to be presented in this plan. These requirements affect all aspects of disaster recovery, not just disaster debris cleanup and diversion programs. Each city is encouraged to obtain training in the disaster assistance process so that appropriate city staff are familiar with the authorities, work eligibility, cost eligibility, application procedures, damage survey report process, and other details. The California Specialized Training Institutes (CSTI), part of the Governor's Office of Emergency Services, offers several courses in this topic, and local governments can request training from the Disaster Assistance Division of the Governor's Office of Emergency Services.

A few of the funding and reimbursement factors that specifically relate to disaster debris cleanup and diversion are presented below:

- The Federal Emergency Management Agency (FEMA) typically reimburses program costs and does not advance them. This means that local jurisdictions must identify other funds that can be used to implement programs until FEMA moneys are available. (Note: FEMA may advance funds for "small projects," which are less than \$42,500. Funding occurs as reimbursement for larger projects.) Each jurisdiction should identify the funding sources available to it for disaster debris management and compile its existing policies that support diversion programs over disposal. If resources are available, Recycling Board grants or mini-grants may be one source of funding for disaster-debris diversion projects.
- FEMA's policy has generally been to reimburse for the "least cost" programs. If debris diversion costs more than landfilling, FEMA would typically reimburse only for disposal, **unless a jurisdiction could demonstrate that diversion is consistent with an existing policy.** After the Northridge Earthquake in January 1994, the City of Los Angeles was able to secure FEMA reimbursement for debris diversion programs, even though they cost more than disposal, because the city had an existing policy of maximizing diversion in accordance with AB 939.

- Debris clearance to be funded by FEMA must be completed within 6 months after the date of the major disaster declaration, unless a request for an extension is granted based on adequate justification. It is important to remember that reimbursable costs are allowed only to the date of the last approved time extension.

The CIWMB's January 1997 Integrated Waste Management Disaster Plan included an excellent summary of the guidelines used to determine if expenditures for debris removal are eligible for federal reimbursement. These guidelines are provided in Appendix B. While these guidelines do not specifically address debris **diversion**, they are important considerations if materials need to be moved before they can be reused or recycled.

## REFERENCES

- Alameda County Public Works Agency. 1988. *Mutual Assistance Agreement*. June 17.
- Alameda County. 1995. *Agreement for Participation in Alameda County Operational Area Emergency Management Organization*. January 24.
- Alameda County Waste Management Authority and Source Reduction and Recycling Board. 1996. *Proposed Budget FY 1996/97*. May 30.
- Alameda County Waste Management Authority. 1996. *Alameda County Integrated Waste Management Plan, Countywide Element, Final Draft*. April 24.
- Alameda County Office of Emergency Services. 1996. *Alameda County Emergency Operations Plan*.
- Alameda County. 1982. *Seismic Safety and Safety Elements of the County of Alameda General Plan*. August 5.
- Association of Bay Area Governments. 1996. *Shaken Awake! Estimates of Uninhabitable Dwelling Units and Peak Shelter Populations in Future Earthquakes Affecting the San Francisco Bay Region*. April.
- Berg, Tom. 1995. *Processing L.A.'s Quake Waste*. Waste Age. January 1995.
- California Integrated Waste Management Board, Policy, Research, and Technical Advisory Committee. 1993. *Agenda Item 2, Consideration of the Solid Waste Disaster Report:: A Summary of Disasters and Solid Waste Management Actions*. February 3.
- California Integrated Waste Management Board, Policy, Research, and Technical Advisory Committee. 1993. *Discussion of the Draft Outline for the Integrated Waste Management Disaster Plan*. April 7.
- California Integrated Waste Management Board. 1996. *Construction Demolition Recycling - Organizations/Publications List*. January 24.
- California Integrated Waste Management Board. 1996. *Construction/Demolition Recyclers - Processors and Receivers*. April 29.
- California Integrated Waste Management Board. 1996. *Construction & Demolition Recycling Publications Fact Sheet*. July 11.

- California Integrated Waste Management. 1996. *Consideration of Approval of the Negative Declaration and the Proposed Emergency Waiver of Standards Regulations, Title 14, Division 7, Chapter 3, Article 3, Sections 17210-17210.9*. April 24.
- California Integrated Waste Management Board. 1997. *Integrated Waste Management Disaster Plan*. January.
- California Office of Emergency Services. 1993. *Earthquake Recovery: A Survival Manual for Local Government*. September.
- City of Los Angeles Bureau of Sanitation Integrated Waste Management Office. 1995. *Northridge Earthquake Response Effort, Final Report*. September 15.
- City of Los Angeles. 1994. *Northridge Earthquake Recycling Requirements for C-21 Contractors*. November 14.
- City of Santa Clarita. 1994. *Ordinance No. 94-01E (Emergency), An Emergency Ordinance of the City of Santa Clarita Establishing the Santa Clarita Abatement Program for Mitigation of Structural Hazards and Debris Removal*.
- Coke, Janet. 1995. *Calabasas Landfill Earthquake Debris Recovery Program*. September.
- Friesen, G., J. Harder, and W. Rifer. 1994. *Closing the Loop After the Storm*. Resource Recycling. October, p. 37.
- Halal, Ann Marie. 1997. *Storms Create Havoc - And Debris*. Waste News. March 10.
- Sheehan, K., and C. Thoresen. 1993. *Des Moines, Iowa: A River Ran Through It, and Over It*. Waste Age. November, p. 39.
- State of California. 1950. *California Disaster and Civil Defense Master Mutual Aid Agreement*. November 15.
- Steuteville, R. 1992. *Recycling After the Storm*. BioCycle. October, p. 30.
- Town of Los Gatos. 1989. *Ordinance No. 1800, Urgency Ordinance of the Town of Los Gatos Establishing the Los Gatos Restoration Program for the Repair, Restoration, and Reconstruction of Structures Damaged as a Result of the October 17, 1989 Earthquake*.
- United States Environmental Protection Agency, Solid Waste and Emergency Response. 1995. *Planning for Disaster Debris* (EPA530-K-95-010), December.
- White, Kathleen. 1996. *Flood Debris Collection Drop-Off Sites Deemed a Success by Portland, Ore., Officials* Waste Age. April 2, p. 1.

White, Kathleen. 1996. *Portland, Oregon, and Surrounding Counties Deal with Flood Debris*. Waste Age. March 5, p. 1.

**Appendix A**  
**Sample Documents**



## **Appendix B**

### **Debris Removal Guidelines**