



Debris Removal

PURPOSE

A. The purpose of the annex is to provide procedures for coordinated management of debris removal during and after a disaster. The amount of debris that can be expected was calculated in the Public Works Annex to the County EOP and we have geared our response to that end.

See Executive Operations Basic Plan, Damage Assessment and Public Works.

Public Law 93-28, Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended.

Title 44 (Emergency Management and Assistance), Code of Federal Regulations.

EXPLANATION OF TERMS

Acronyms

CFR	Code of Federal Regulations
KDEM	Kansas Division of Emergency Management
DFO	Disaster Field Office
DRC	Disaster Recovery Center
DR	Disaster Report
FEMA	Federal Emergency Management Agency
JIC	Joint Information Center
IA	Individual Assistance
PA	Public Assistance
PDA	Preliminary Damage Assessment
PIO	Public Information Officer
PW	Project Worksheet
SBA	Small Business Administration
SOP	Standard Operating Procedure

B. Responsibilities

1. It is the responsibility of the County Engineer for coordinating debris removal and disposal functions in the County in the event of a disaster. The Engineer will coordinate all effort with the Emergency Operations Center and the Emergency Manager. The project planning process followed in developing an effective debris removal plan consists of three basic planning requirements. The first is the identification of program needs. In the emergency planning and operations this requirements is met through the process of damage assessment.
 - a. The first step in recovering from natural disasters is damage assessment. Damage assessment is the process used to determine the magnitude of the disaster damage. Early damage assessment is necessary to identify requirements from life saving actions and resources needed from other local governments and the state. A survey of the damaged area must be made immediately to record types of damage and to identify requirements for assistance. Damage assessment teams should illustrate the amount and composition of debris on maps of the community.
 - b. For management purposes, the community should be divided into sectors or zones. Some things to be considered in selecting the size of these areas are the type of debris, location, volume, land use and location of existing and potential disposal areas.
2. The second planning requirement is the identification of resources available to meet those needs.
 - a. **Local Government**

Most local governments maintain equipment such as trucks, loaders, graders, chippers, chain saws, small cranes, dozers and backhoes. They also have experienced operators that can be used to open roads and remove debris. Temporary hires may be added to provide additional labor and equipment operators for 24 hour-a-day operation, if needed.
 - b. **State Agencies**

The National Guard, Transportation Cabinet and Natural Resources have equipment and personnel that may provide limited assistance on a short term basis.
 - c. The **Federal Emergency Management Agency** can provide grant assistance for some debris removal if the disaster affected area is declared a Major Disaster Area by the President under Public Law 93-288. The Federal Highway Administration can provide assistance to State government for debris removal and repair of State Highways.
 - d. The **Interstate Emergency Management Assistance Compact** is an understanding among neighboring communities to provide assistance to one another in time of need.

3. The third requirement is the development of an organization to match program resources to program needs.
 - a. Organization is the key to a successful debris removal operation. Following a major disaster, resources from other communities, state agencies and volunteer groups may be available to assist local resources. However, these resources will not be used effectively unless an overall plan is already in place.
 - b. Each community should set up a separate task force organization to manage and control the project. One individual is given total responsibility for managing the project and is provided the resources necessary to carry it to completion, priorities may not be properly developed or work assignments completed in a timely manner.
4. Debris removal is a major component of most disaster recovery operations. Following a natural disaster, debris removal must begin immediately in certain areas of the community in order to protect public health and safety. Debris, in most cases, is caused by high winds, flood waters, earthquakes, landslides or fires. The following describes the composition and distribution of debris frequently generated by various disaster agents:
 - a. **Tornadoes**

Damage from tornadoes is caused by high velocity rotating winds. The severity of the damage depends on the size of the tornado funnel and the length of time the funnel is on the ground. Tornado debris consists of damaged and/or destroyed structures, trees and personal property. Debris is usually confined along a narrow path up to one-half mile wide from a hundred yards to several miles long.
 - b. **Floods**

The damage from floods is caused by structural inundation and high velocity waters. Structural damage is usually limited to the floodway and the floodplain area immediately adjacent to the stream. Heavy structural damage may result from high velocity waters in mountainous areas or failure of a flood control project such as a dam levee. Flood debris consists of sediments deposited on public and private property and discarded personal belongings from flooded homes. Additionally, heavy rains and floods may cause bridges to be washed away and can produce many landslides. Debris from landslides consist primarily of soil, gravel, rock and some construction materials.
 - c. **Earthquakes**

The damage from catastrophic earthquakes are caused by shockwaves and earth movements along the fault lines. Secondary damages such as fires and explosions may result from the disruption of utility systems. Debris consists of building materials, personal property and sediments caused by landslides.

C. Local Resources

1. It is the responsibility of the County Engineer to maintain an inventory of all personnel and equipment for response to a disaster clean up operation. This will include a working knowledge of the local contractors as well.
2. **Jurisdiction**--Local government has the initial responsibility for debris removal. However, if the emergency or disaster is beyond the capability of local government, they may request assistance from the state, other local governments, contractors, etc.
3. After the state has exhausted all resources available in an effort to provide local government with the support they need to recover from the event, they may request assistance from the federal government.
4. After all resources from state and local government have been exhausted, the Governor may request a Presidential Disaster Declaration under the provisions of PL 93-288, as amended, which will make certain federal agencies available to assist state and local governments, private non-profit organizations, small businesses, farmers and individuals recover from the disaster.
5. **Contractual**—The contractors shall maintain a list of their equipment and personnel so that their equipment can be utilized during a disaster.

D. Volunteers

1. Volunteers can play a significant role in large-scale debris removal operations. The American Red Cross Disaster Service, Salvation Army and other VOAD agencies can assist private property owners or provide financial assistance in the removal of debris from private property.

E. Mutual Aid

1. The County Fire Districts have signed Mutual Aid pacts and will coordinate resources during a disaster. These will augment equipment and personnel for debris removal and disposal.

F. Ordinances and Regulations

1. Currently there are no resolutions in place that specifically address debris removal. Our plan, therefore, identifies Placement of Debris, Recyclable Materials and Burnable Debris. See Debris Reduction Methods section in this annex.

G. Facilities & Infrastructure

1. It is the responsibility of the County Engineer to determine the local resources and capabilities that are available in the County in the event that the removal and disposal of debris is required. Depending on the magnitude of the event, the following concerns should be addressed:

- a. **Landfills**—Both public use and private should be assessed for the following criteria:
 1. **Structural Characteristics**—are the sites lined or unlined?
 2. **License Restrictions**—Are there restrictions on the landfill's ability to accept debris whether hazardous materials or waste?
 3. **Capacity**—Does the landfill have the licensed space to receive the debris?
- b. **Transportation Routes**—Consideration must be given for the size of the vehicles and weight when hauling debris materials. Capacity of bridges along the chosen route must be considered in order to determine their load limits.

H. Public Information

1. **Public awareness** must be stressed in this function due to the amount of illegal dumping and public announcements on where citizens can bring their debris. This information will be announced via the various media sources.
 - a. **Public Awareness**—Public information about the magnitude of the situation and sequence of debris removal and disposal operations. Public officials and environmental groups will be briefed on the burning methods that may be used, how the system works, environmental standards utilized and associated health risks.
 - b. **Reporting**—Persons discovering illegal dumping activity should report that to the Sheriff's Office by calling the 911 Communications Center.
 - c. **Contracting**—Public notices will be issued for hiring contractors to remove debris.

I. Criteria For Debris Removal

1. The main focus of this plan is to provide access by clearing debris from highway and/or waterways as quickly as possible with the resources available. To provide emergency road repairs to support immediate health and safety needs. To properly dispose of debris in the most economical and efficient method possible complying with all policies and ordinances established by local jurisdictions.
2. **Threats to Public Health and Safety**—The first priority for the removal of debris will be those that deny entry and exit for emergency services, public health and safety.
3. **Prevention of Damage**—The second priority will be for the removal of debris that pose a significant threat to life and safety. This includes the threat of damage to public structures, bridges and roadways.
4. **Speedy Recovery**—The 3rd priority is the removal of debris that impede business or economic recovery in the immediate disaster area.
5. **Debris on Private Property**—The 4th priority is the removal of debris that are on private property. The owner of said property will be responsible to make arrangements for removal of debris from his property. Every effort will be made

to assist the individual homeowner whenever possible with county/city resources if the debris is causing more damage to a home owner primary residence or blocking entry exit of emergency response vehicles.

- a. **Homeowner's Insurance**—Most home owners extended coverage policy have special coverage for debris removal and demolition of damaged structures.
- b. **Debris at Curb Side**—The proper location of debris removal by county crews shall be on the curbside of the affected structure. A clear path of travel shall be maintained at all times.
- c. **Right of Entry**—The County Engineer shall provide a waiver of liability if county resources are to be utilized to assist in the removal of debris from private property when it poses a hazard to public health. The right of way entry agreement shall indicate any known intent of the owner to rebuild and insure that foundation and utilities are not damaged during the debris removal.

J. Temporary Debris Staging and Reduction Sites

1. For the purpose of temporary debris staging and waste reduction sites, specific predesignated sites shall be determined by the County Engineer when a disaster occurs. These sites shall be identified prior to any disposal of debris by county resources. The criteria used for site selection shall include:
 - a. Noise, traffic and environmental impact
 - b. Locations where the removal operations will be most efficient in relation to the affected disaster area and permanent disposal site.
 - c. Site should be on County or public owned property with sufficient clear area to process the debris.

K. Debris Reduction Methods

1. There are several methods of debris removal including burning, grinding and chipping, burying and recycling. Each method has its advantages and disadvantages. Ideally, all methods should be used to expedite debris reduction operations while complying with local and state ordinances and environmental regulations.
 - a. **Reduction by burning:** There are several burning methods available including open burning, air curtain pit burning and refractor line pit burning. Each burning method has advantages and disadvantages that should be considered before selection and implementation as part of the overall volume reduction strategy.
 - 1) **Uncontrolled Open-burning**-uncontrolled open burning is the least desirable method of volume reduction because it lacks any type of environmental control.
 - 2) **Controlled open-burning**- controlled open burning is a cost effective method for reducing clean woody debris in rural areas.
 - 3) Clean wood debris presents little environmental damage and the resulting ash can be used as a soil additive by the local agricultural

community. Pursuant to KDHE fires may be set for the following purposes provided that such fires do not violate any of the provisions or any other laws or any local ordinances.

Fires set for disposal of natural growth for land clearing, and trees and tree limbs felled by storms, provided that no extraneous material such as tires or heavy oil which tend to produce dense smoke are used to cause ignition or aid combustion and the burning is done on sunny days with mild winds.

- 4) **Air Curtain Pit Burning-** offers an effective means to expedite the volume reduction process by substantially reducing the environmental concerns caused by open burning.
- 5) **Refractor Lined Pit Burning** or pre-manufactured refractor lined pit burners are an alternate to air curtain open pit burning. The units can be erected on site in a minimal amount of time. Some are portable and other must be built in-place. The units are especially suited for locations with high water tables, sandy soil, or where materials are not available to build above ground pits. The units are air curtain blowers that deliver air at predetermined velocities and capacities. The nozzle 20 feet long would have a velocity of over 120 miles per hour and would be delivering 20,000 cubic feet of air per minute to the fire. The air traps smoke and small particles and recirculates them to enhance combustion which reaches over 2500 degrees Fahrenheit. Manufactures claim that combustion rates of about 25 tons per hour are achievable.
 - a) **Reduction by Grinding and Chipping-** grinding and chipping woody debris reduces the large amounts of downed trees. Chipping operations are suitable in urban areas where streets are narrow or in groves where it is cheaper to reduce the woody vegetation to mulch to move it a central grinding site and then returning it to the grove. This reduces the costs associated with double handling.
 - b) **Reduction by Burying-**burying is a safe and economical way to dispose of debris if all rules and regulations are followed carefully. If no hazardous wastes are involved, you may bury the debris on site. To receive an emergency permit to take the debris to another location to bury later, you must call the KDHE.
 - c) **Reduction by Recycling-** recycling reduces mixed debris volume before it is hauled to a landfill. Recycling is attractive since there may be an economic value to the recovered material if it can be sorted and sold. Metals, wood and soils are prime candidates for recycling. The major drawback is the potential environmental impact of the recycling operation. The areas where there is a large usage of chemical agricultural fertilizer the recovered soil may be too contaminated for use on residential or existing agricultural land.
 - d) **Ash**—Ash resulting from burn operations can be recycled as a soil additive.

- e) **Mulch**—from chipping and grinding can be recycled
- f) **Metals**—Can be recycled through the land fill or by other private organizations.
- g) **Soil**—Cleanup operations using large pieces of equipment can pick up large amounts of soil. This soil can be recovered through screen or shaker systems and sold or recycled back into the community.
- h) **Construction Materials**—Concrete block and other building materials can be ground and used for other purposes. Construction materials and wood can be shredded to reduce volume.

L. Ultimate Disposal Site

- 1. The County Engineer will determine the most appropriate permanent disposal site to serve as the “Ultimate” disposal site.

M. Closing Temporary Debris Staging and Reduction Sites

- 1. After a disaster has been terminated, it will be necessary to return the debris holding areas back to their pre-disaster usage. The following guide will be utilized in cooperation with the KDHE Waste Management Division:
 - a. **Removal of Debris**—Sites must be cleared of all foreign materials introduced as a result of the incident.
 - b. **Environmental Assessment**—An environmental assessment must be conducted in coordination with the KDHE to establish the need for testing and monitoring of ground soil, ash and water conditions.
 - c. **Environmental Restoration**—Contamination may occur from petroleum spills at staging and reduction sites, runoff from debris piles, burn sites and ash piles. These areas should be monitored as well.

Evaluation After careful review of this annex it was discovered that there are presently no resolutions or ordinances concerning debris placement, Recyclable materials or burnable debris. A plan will be developed to correct this deficiency.

REFERENCES

FEMA DAP-15 (Draft) (Dec. 1991) Debris Removal Guidelines for State and Local Officials
 Federal Response Plan
 FEMA Debris Removal and Disposal Guidelines, April 1994