The Houston-Galveston Area Council

Disaster Debris Management Best Practices Manual and Checklists

Houston-Galveston Area Council

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EXECUTIVE SUMMARY

Disaster debris management operations can be overwhelming. Roads may be blocked with debris, preventing fire, police, and emergency medical staff from responding to emergencies. Your jurisdiction may not have the equipment or staff available to deal with so much debris. You may also be dealing with power outages, damaged facilities, and personal losses from the incident. Adding to the pressure, if state and federal procedures are not properly followed, it could mean your jurisdiction might not be eligible for reimbursement, leaving your jurisdiction responsible for potentially millions of dollars in debris clearing and removal costs.

Disaster debris management is challenging, but preparation can reduce the burden. This manual introduces practical best practices drawn from proven approaches to help you prepare for and respond more effectively to debris-generating incidents. The information in this manual draws on state and federal guidance as well as proven best practices and lessons learned from disaster debris management operations nationwide.

This manual includes:

Section 1: Preparation of a Disaster Debris Management Plan (DDMP). This section discusses the importance of establishing a DDMP, including who should play a role in the development of the plan and what key elements should be included.

Section 2: Prepositioned Contracts. This section identifies the benefits of having prepositioned contracts in place for both debris hauling and debris monitoring.

Section 3: Identify Debris Management Sites (DMS). This section discusses the value of having DMS, what you should look for in DMS locations, and the steps involved in securing the appropriate permitting.

Section 4: Estimating Debris for Disaster Declaration Purposes. This section discusses the processes for estimating debris quantities. Conducting these estimates immediately after an incident is important for determining the extent of the effort and can be a key factor in whether a disaster is declared in the jurisdiction.

Section 5: Strategic Planning with Elected Officials. This section discusses the importance of coordinating with elected leaders before and after a debris-generating incident. It also addresses the need for processes that ensure regular information-sharing so that debris management priorities remain consistent throughout recovery.

Section 6: Public Information Strategies. This section provides strategies for providing public information messages throughout debris management operations to encourage cooperation and understanding from the public.

Section 7: Recycling and Disposal. This section discusses recycling and disposal of disaster debris. It identifies resources for managing debris streams while diverting as much material from landfills as possible.

CONTENTS

1. PREPARATION OF A DISASTER DEBRIS MANAGEMENT PLAN

Developing a DDMP can aid local jurisdictions in preparing for and responding to debris-generating incidents. While no plan can account for every situation, a DDMP provides a clear framework to guide response and recovery.

The Benefits of Having a DDMP

There are several benefits of having a DDMP.

1. The DDMP lists responsibilities of the various departments and entities with a role in disaster debris management. Having clear assignments for specific responsibilities, including a clear chain of command, helps ensure that the response can begin immediately without uncertainty over authority or responsibilities.
2. The DDMP identifies resources available to assist in response and recovery. It can include jurisdiction-owned equipment for clearing roads and collecting debris, mutual aid resources and procedures, and contractors and volunteer agencies with the expertise to provide the services required.
3. The DDMP identifies the regulations governing compliance with state and federal policies and programs. Compliance is critical to ensure the jurisdiction receives needed resources and can be reimbursed for debris management expenses. FEMA reports that debris removal can account for up to 27 percent of disaster recovery costs.
4. The DDMP provides debris estimates to support planning. Estimating the types and amounts of debris likely to result from potential threats forms the basis for debris management planning. Every disaster is different, and estimates may vary, but even general projections help determine the resources and funding needed for response and recovery.
5. The DDMP establishes the strategy for preparing for and responding to debris-generating incidents. Drawing on state and federal guidance, along with best practices from other jurisdictions and contractors, the strategy should remain flexible and scalable to adapt to changing disaster conditions.

The Elements of a DDMP

The Federal Emergency Management Agency (FEMA) identified the elements that should be included in a DDMP:

- **Overview.** The purpose and objectives of the plan should be described.
- **Events and assumptions.** The plan should provide information on the types and anticipated quantities of debris that will be generated from various types and sizes of events.
- **Debris collection and removal.** The plan should include a debris collection strategy, discuss the methods that will be used to remove debris, and establish priorities for clearance and removal. The plan should also outline the roles and responsibilities of the various jurisdiction functions involved, such as public works, finance, and solid waste management.

- **Debris disposal locations/DMS.** The plan should specify whether disaster debris will be segregated, reduced, and disposed of at designated sites or hauled to a recycling facility.
- **Debris removal on private property.** The plan should address the authority and processes for private property debris removal.
- **Use and procurement of contracted services.** The plan should describe the types of debris operations that will be contracted and the process and procedure for acquiring competitively procured contracted services.
- **Use of force account.** The plan should define the types of work that force account labor (jurisdiction staff) will accomplish.
- **Monitoring of debris operations.** The plan should describe who and how debris removal contractors will be monitored at pickup sites, DMS, and final disposal.
- **Health and safety requirements.** The plan should describe how workers and the public will be protected and discuss the specific measures for adherence to safety rules and procedures.
- **Environmental considerations/regulatory requirements.** The plan should identify all debris operations that will trigger compliance with environmental and historic preservation laws and how compliance will be attained.
- **Public information strategy.** The plan should include a public information strategy to ensure that residents receive accurate and timely information about debris operations.
- **Identification of debris removal contractors.** The jurisdiction should identify at least one or more debris contractors that it has prequalified.

A DDMP checklist can be found in **Appendix B**.

The Disaster Debris Management Planning Team

To initiate development of the DDMP, one should identify who should be included in the planning process. Several departments may have a role in the disaster debris management operations and, therefore, should also play a role in the planning process. The responsibilities of the various departments and entities as well as the resources they can provide should be verified during the planning process.

Departments/entities that may participate in planning and their potential responsibilities include the following:

- Administration
    - Coordinate with the governing body of the jurisdiction to declare a disaster.
    - Request resources as needed.
    - Respond to public inquiries.
    - Approve contracts as needed.
- Attorney
    - Draft a declaration of disaster for approval by the governing body.
    - Review debris removal and monitoring contracts to ensure they are in accordance with local, state, and federal regulations.
    - Review right of entry agreements (if needed).
    - Support code enforcement in nuisance abatement actions.

- Building Inspections
    - Conduct inspections of buildings and residences for safety and ensure they meet building codes.
- Code Compliance
    - Enforce regulations pertaining to businesses and residences within the jurisdiction.
    - Conduct nuisance abatement actions as needed following a disaster.
- Communications/Public Affairs
    - Provide instructions to the public regarding debris operations.
    - Provide the status of debris operations.
    - Address rumors and correct misinformation.
- Emergency Management
    - Manage resource requests.
    - Manage damage and debris estimates.
    - Provide incident command.
    - Facilitate communication among responding agencies.
- Finance
    - Track costs of debris operations for reimbursement.
        - Employee hours
        - Equipment use
        - Rental equipment
        - Contractor resources
        - Mutual aid resources
    - Review and pay contractor invoices.
- Fire Department
    - Respond to fires at the DMS.
    - Report debris blocking roadways.
    - Report downed power lines.
- Geographic Information System (GIS)
    - Provide maps of jurisdiction boundaries for contractors and others assisting with the disaster.
    - Map areas of hazards.
    - Document progress of debris operations.
- Law Enforcement
    - Provide security for DMS (or contractor may provide this).
    - Implement road closures as needed in coordination with public works to block hazards or to accommodate debris removal operations.
    - Identify ownership and removal of damaged/abandoned vehicles.
- Parks
    - Provide equipment to move and collect debris.
    - Oversee jurisdiction-owned park debris removal.
    - Provide land for potential DMS operations.
- Public Health
    - Process letter needed from the public health authority verifying the threat the debris poses to public health.
    - Conduct or oversee environmental monitoring during debris operations such as soil testing of DMS.

- Public Works
    - Provide equipment and staff to push debris off roads.
    - Conduct debris collection.
    - Provide knowledge of jurisdiction owned roadways.
- Purchasing
    - Acquire needed supplies and services in keeping with federal purchasing guidelines.
- Risk Management
    - Address claims of damage to personal property that inevitably occurs during disaster debris operations.
- Solid Waste
    - Provide equipment and staff to move debris and/or oversee management of solid waste contracts.
    - Provide knowledge of recycling and disposal options.
- Identify other stakeholders outside your organization with a role in disaster debris management.
    - Debris Haulers
        - Contractor for clearing, collection, and disposal of debris.
    - Debris Monitors
        - Contractor for documenting the collection and disposal of debris, including the location, type, quantity, and reduction.
        - Certifies trucks and verifies debris hauler invoices prior to payment by the jurisdiction.
    - Trash hauler
        - Regular trash collection must be continued because the debris hauler will not pick up trash. Confirm the division of responsibilities between the debris hauler and the trash hauler and how different waste streams will be managed (e.g., household hazardous waste, electronic waste, construction and demolition (C&D), vegetative, and white goods).
    - Volunteer agencies
        - Coordinate with volunteer agencies to assist residents in bringing debris to the right-of-way, mucking out houses, etc. (Note: Volunteer agency hours can be used to help meet the jurisdiction's match requirement for public assistance funding).
    - Recycling, Mulch, Compost, and Landfill Facilities
        - Coordinate in planning with operators of recycling, mulch, compost, and landfill facilities to identify potential end uses for the debris collected from the incident. Also, coordinate with landfill operators to discuss final disposal options.

Identify Debris Management-Specific Roles

In addition to the departmental responsibilities, there may be debris management-specific roles that need to be filled. Responsibilities of key positions that could be used for debris management operations are described below. The level of staffing for response to a debris-generating incident will need to be flexible and scalable to the incident. Job aid checklists for debris management operations are provided in **Appendix C**.

Debris Manager

- Establish a Debris Management Operations Center (DMOC).
- Activate contractors for debris clearing and debris monitoring services.
- Establish priorities for debris management operations.
- Collaborate with federal, state, and other agency representatives.
- Provide updates to Emergency Management regarding debris management operations.
- Coordinate with the Public Information Officer to develop public information messages regarding debris operations.
- Coordinate with Finance in the tracking of debris management costs.
- Coordinate the demobilization of debris management operations.

Street-Clearing Task Force Leader

- Stage and prepare resources immediately prior to an expected incident to ensure these will be fueled and ready to activate in the event they would be needed to clear debris off jurisdiction streets.
- Oversee street-clearing immediately following a debris-generating incident.
- Coordinate local and contract resources to clear streets of debris in accordance with established objectives and priorities.
- Track progress of street-clearing operations.
- Provide regular updates to the Debris Manager regarding the status of street-clearing operations.
- Coordinate with the Safety Officer in the Emergency Operations Center (EOC) to ensure street-clearing operations are conducted in a safe manner.
- Ensure all hours, expenses, and equipment use are accurately documented.

Debris Collection and Disposal Task Force Leader

- Coordinate with local and contract resources to stage and ready resources immediately prior to an expected incident to ensure these will be fueled and ready to activate in the event they are needed to collect debris.
- Coordinate with the debris monitoring contractor to conduct truck certifications.
- Coordinate local and contract resources to conduct debris collection operations in accordance with established objectives and priorities.
- Coordinate with the debris monitoring contractor to conduct collection, DMS, and disposal site monitoring.
- Activate DMS locations as needed in coordination with relevant departments and agencies.
- Coordinate with environmental staff to conduct soil sampling at DMS locations prior to and after closure of DMS locations.
- Coordinate with local labor and contractors to ensure debris is recycled or disposed of in accordance with regulatory guidelines.
- Coordinate local and contract resources to conduct special debris operations including removals of dangerous trees, privately owned vehicles and vessels, waterway debris, parks debris, and private property debris in accordance with FEMA authorization and guidelines.
- Track progress of debris collection, recycling, and disposal in coordination with the debris monitoring contractor.

- Provide regular updates to the Debris Manager regarding the status of operations.
- Coordinate with the Safety Officer in the EOC to ensure debris collection and disposal operations are conducted in a safe manner.
- Ensure all hours, expenses, and equipment use are accurately documented.

Environmental Health Task Force Leader

- Liaise with state and federal environmental agencies and contractors to monitor environmental impacts of debris management operations, including ground/surface water, air, soil, and asbestos monitoring.
- Coordinate with the Debris Manager, or designee, to conduct soil sampling at DMS locations prior to and after closure of DMS locations.
- Conduct permitting of DMS locations.
- Track progress of environmental monitoring and testing operations and document results.
- Provide regular updates to the Debris Manager regarding the status of environmental monitoring operations.
- Coordinate with the Safety Officer in the EOC to ensure environmental monitoring operations are conducted in a safe manner.
- Ensure all hours, expenses, and equipment use are accurately documented.

Debris Clearing Teams

- Coordinate through the Street-Clearing Branch Director to divide into teams and clear streets of debris in accordance with established objectives and priorities.
- Report any hazardous conditions such as downed power lines, hazardous materials (HAZMAT) spills, and natural gas leaks to the proper authorities as well as the Street-Clearing Division Supervisor.
- Track progress of the Task Force in street-clearing operations.
- Provide updates as required to the Street-Clearing Task Force Leader regarding the status and progress of the team.
- Obey health and safety policy and follow health and safety guidance in conducting street-clearing operations.
- Ensure all hours, expenses, and equipment use are accurately documented.

Debris Removal Teams

- Coordinate through the Debris Collection and Disposal Branch Director to divide into teams consisting of debris removal and debris monitors to collect debris and deliver it to the appropriate location for reduction, recycling, or disposal.
- Report any hazardous conditions such as downed power lines, HAZMAT spills, and natural gas leaks to the proper authorities as well as the Debris Collection and Disposal Task Force Leader.
- Track progress of the Task Force in debris removal, reduction, recycling, and disposal operations.
- Provide updates as required to the Debris Collection and Disposal Task Force Leader regarding the status and progress of the Task Force.

- Obey health and safety policy and follow health and safety guidance in conducting debris removal, reduction, and disposal operations.
- Ensure all hours, expenses, and equipment use are accurately documented.

Debris Management Strategy

The debris management strategy should examine actions that should be taken in each phase of the debris management process to include:

Preparedness: Actions you can take to prepare in normal conditions when there is no disaster.

Pre-incident: Actions to be taken when a potential debris incident is imminent.

Response: Actions to be taken to save lives and protect property. This includes clearing roads of debris so emergency vehicles and utility restoration vehicles can access affected areas.

Recovery: Actions to remove debris, then transport it to be reduced, recycled, reused, or disposed of in accordance with local, state, and federal environmental laws and guidelines.

For the pre-incident, response, and recovery phases, hours and expenses need to be tracked. In addition, debris clearance, removal, and disposal activities must be monitored by the jurisdiction or a contractor to qualify for reimbursement for eligible expenses under the Public Assistance Program.

A checklist for debris management tasks by phase of operations can be found in **Appendix D**.

Figure 1-1: The EPA's Planning for Natural Disaster Debris Guidance

Road Clearance Priorities

To effectively clear roads following a debris-generating incident, a list of priority roads and facilities should be identified. During the road clearance phase, the debris is not picked up; it is merely pushed to the side of the road to allow one or more vehicles the ability to traverse the roadway. In the immediate aftermath of a disaster, debris needs to be cleared from roadways deemed to be a priority for emergency vehicles such as ambulances, fire, police, and utility restoration crews to perform emergency services and restoration services. Roads that may be considered priority may include or have facilities that include:

- Major thoroughfares
- Fire stations
- Police stations
- Hospitals
- Nursing facilities
- Water and wastewater pump stations

- Communications facilities
- Utilities

Additional DDMP information can be found in the Environmental Protection Agency's (EPA) Planning for Natural Disaster Debris guidance document.[1]

[1] Planning for Natural Disaster Debris, EPA, June 2025, https://www.epa.gov/system/files/documents/2025-06/revised_final_pndd_guidance_0.pdf

2. PREPOSITIONED CONTRACTS

The Benefit of Prepositioned Contracts

FEMA encourages jurisdictions to award prepositioned contracts, or advance contracts, before an incident occurs. Awarding prepositioned contracts allows jurisdictions to conduct a deliberate procurement process outside of the pressure and immediate demands of a disaster. It also helps to ensure that jurisdictions have contractors ready to perform work quickly after an incident occurs. Other benefits of prepositioned contracts include:

- Other communities may be competing with the same resources following a disaster.
- Can save time in an emergency.
- Provides an opportunity to negotiate better rates than at the time of an emergency.
- Contractors may be stretched thin and may not be willing to take on any new business after a disaster.

Requirements for Prepositioned Contracts

To award prepositioned contracts, a jurisdiction must ensure:

- **Full and open competition.** Full and open competition generally means that a complete requirement is publicly solicited, and all responsible contractors are permitted to compete. The procurement must also be consistent with the methods of procurement at 2 Code of Federal Regulations (CFR) §200.320.
- **The scope of work includes anticipated disaster work.**[2] Solicitations must incorporate a clear and accurate description of the technical requirements for the material, product, or service to be procured. These descriptions enable potential contractors to understand the requirements and prepare sound proposals to satisfy those requirements.
- **Include small and minority businesses, women's business enterprises, and labor surplus area firms.** Jurisdictions should take all necessary affirmative steps to ensure that small and minority businesses, women's business enterprises, and labor area surplus firms are used when possible.[3]
- **Document the contractor's integrity, compliance with public policy, record of past performance, and financial and technical resources.**[4] The jurisdiction must be able to verify that the contractor:
    - Has enough resources (i.e., personnel and subcontractors), with adequate experience, to perform the required work.
    - Has adequate financial resources to perform the contract or has the ability to obtain such resources.
    - Has or will be able to acquire the required construction, production, and/or technical facilities, equipment, and other resources to perform the work under the contract.

[2] Procurement Disaster Assistance Team Field Manual, Section 3.1 Clear and Accurate Description of Requirements
[3] Procurement Disaster Assistance Team Field Manual, Chapter 6: Socioeconomic Contracting
[4] Procurement Disaster Assistance Team Field Manual, Section 1.7. Contractor Responsibility Determination

    - Has a satisfactory record of integrity and business ethics.
    - Has complied with the public policies of the federal government as well as the public policies of appropriate states, local governments, or Indian Tribal Governments.
- **The contractor was not suspended or debarred.**[5] A jurisdiction must ensure the contractor is not suspended or debarred. Suspension is an action taken by the Suspension and Debarment Official (SDO) that excludes a party from participating in a covered transaction for a temporary period. Debarment is an action taken by the SDO to exclude parties from participating in a covered transaction for a specified period, typically three years. Jurisdictions must not make any award or permit any award at any tier to parties listed on the government-wide exclusions in the System for Award Management (SAM), which can be found at www.SAM.gov.
- **Exclude contractors that develop or draft specifications, requirements, statements of work, or invitations for bids or requests for proposals.** Contractors who develop the scope of work must be excluded from bidding for the work.
- **The contract was procured in compliance with the federal procurement regulations.** Jurisdictions must use their own documented procurement procedures, which reflect applicable state, local, and Tribal laws and regulations, provided the procurement conforms to applicable Federal law and the standards set forth in 2 CFR Part 200.[6]
- **Contract costs are reasonable in the current market environment.** Jurisdictions must perform and document a cost or price analysis in connection with every procurement action above $250,000 (current simplified acquisition threshold), including contract modifications.

Noncompetitive Proposals

FEMA may reimburse costs incurred under a contract procured through a noncompetitive proposal only when:

- The item or service is only available from one contractor, and no other property or service will satisfy the jurisdiction's need.[7]
- The public exigency or emergency for the requirement will not permit a delay resulting from competitive solicitation.[8]
- FEMA or the Recipient expressly authorizes a noncompetitive proposal in response to a written request from the Applicant.[9]
- After solicitation of a number of sources, competition is determined inadequate.[10]

[5] Procurement Disaster Assistance Team Field Manual, Section 1.7.6. Suspension and Debarment
[6] Procurement Disaster Assistance Team Field Manual, Chapter 3, Section 1, Mandatory Standards
[7] Procurement Disaster Assistance Team Field Manual, Section 3.2 Single Source
[8] Procurement Disaster Assistance Team Field Manual, Section 3.3 Public Emergency or Exigency
[9] Procurement Disaster Assistance Team Field Manual, Section 3.4 Federal Awarding Agency or Pass-Through Entity Approval
[10] Procurement Disaster Assistance Team Field Manual, Section 3.5 Inadequate Competition

Documentation of the Selection

Thorough documentation of all procurement actions is crucial for reimbursement purposes. Jurisdictions should be prepared to show:

- Records sufficient to detail the history of the procurement:
- Rationale for the method of procurement
- Selection of contract type
- Contractor selection or rejection
- The basis for the contract price

Coordinate Planning with Contractors

Following the selection, engage in planning with the selected contractor. Contractors are accustomed to attending meetings with client jurisdictions. Therefore, coordinate with contractors in planning, training, or exercises. Use the planning time to clarify responsibilities, response times, and the equipment that can be brought to bear in response to a debris-generating incident.

A helpful resource in procuring contractors for disaster response is the Procurement Disaster Assistance Team (PDAT) Field Manual. The PDAT Field Manual provides guidance regarding the mandatory requirements for FEMA award recipients and subrecipients using federal funding to finance the procurement of property and services.

The PDAT Field Manual can be found at:

https://www.fema.gov/sites/default/files/documents/fema_PDAT-field-manual_102021.pdf.

A checklist to aid in the procurement of contractors can be found in **Appendix E**.

3. IDENTIFY DEBRIS MANAGEMENT SITES

DMS provide a place to temporarily store, sort, process, and reduce debris before it is taken for reuse, recycling, or disposal. DMS serve the following critical functions:

- Allow the jurisdiction to reduce and/or recycle debris, thereby reducing the impact of the disaster on the lifespan of local landfills.
- Allow trucks to make shorter trips between residential collection areas and the DMS, rather than longer trips to a landfill, enabling faster debris removal from residential areas.
- Reduce the traffic in and out of landfills after a disaster. The haul-out of already reduced debris from the DMS will mean fewer trucks making trips to the landfill.

Figure 3-1: DMS from Hurricane Matthew in South Carolina

Acreage Needed for DMS

During normal operations, before a disaster occurs, is the best time to examine properties for potential use as DMS. This requires understanding the number of acres that will be needed based on the estimated quantities and types of debris a disaster might generate.

Divide the estimated cubic yards of debris by 16,117 to calculate the required debris storage space. The 16,117 figure comes from the United States Army Corps of Engineers (USACE) formula, which states:

- 1 acre = 4,840 square yards
- 10-foot stack height of debris = 3.33 yards
- Total volume per acre = 4,840 square yards per acre x 3.33 yards = 16,117 cubic yards per acre

The calculation also needs to allow for roads and buffers in and around the DMS. For the road and buffer space, the USACE recommends increasing the acres needed by a factor of 1.66. For example, for 1,000,000 cubic yards of debris, divide by 16,117 and then multiply by 1.66 for a total of 102 acres needed.

Considerations in Selecting a DMS

Public-Owned Property. The advantage of using public-owned property is eliminating potential costs associated with acquiring, leasing, or operating on private property. Privately owned property

can be used if there are no public-owned sites available. An agreement can be made between the jurisdiction and the private property owner to use the site as a DMS.

5 Acre Requirement. Preference is given to public-owned properties that are at least 5 acres in size. Sites smaller than 5 acres are generally too small to properly accommodate debris staging and reduction operations but can be utilized if necessary.

Proximity to High Population Density. The proximity of the surveyed sites to neighborhoods, schools, businesses, high-traffic thoroughfares, and other areas of high population density should be carefully evaluated. DMS locations near high population densities increase traffic congestion and create logistical and safety hazards for the community, especially immediately following an incident.

Ingress/Egress. Safe and adequate ingress and egress of the sites, along with efficient road access to routes leading to and from the sites, are critical to ensure efficient operation and turnaround of debris collection vehicles.

Adherence to All Local, State, and Federal Rules, Regulations, and Ordinances. DMS operations must adhere to local, county, state, and federal rules and regulations, including those pertaining to environmental quality and noise control. Though some disposal regulations are lifted following a state of emergency, it is critical that all DMS operations meet Occupational Safety and Health Administration (OSHA) safety requirements as well as the operational procedures outlined by the State and any other relevant environmental regulatory agencies.

Proximity to Natural Running Water or Potable Water Wells. The presence of any natural stream, creek, pond, or lake as well as any potable water wells, can hinder the permitting of a property.

A checklist to aid in the selection of DMS can be found in **Appendix F**.

Permitting the DMS

Prior to using a site as a DMS location, the jurisdiction should coordinate with the jurisdiction's Floodplain Administrator to determine whether a potential DMS location lies within a floodplain. If it does, the Floodplain Administrator may need to issue a waiver for DMS operations to be conducted on the site.

The jurisdiction may also need to coordinate with the jurisdiction's Fire Marshal's Office for fire prevention plans for the site.

After getting the necessary local documentation, the jurisdiction must coordinate with the Texas Historical Commission to ensure the potential DMS does not have historical significance. If it does, such as a site that contains historical artifacts, it might preclude it from being used as a DMS. A Disposal Site Evaluation and Registry Form needs to be completed and submitted to the Texas Historical Commission via their eTrac system. Instructions can be found on the form at https://thc.texas.gov/sites/default/files/2024-09/THC%20Disposal%20Site%20Evaluation%20and%20Registry_ED%20edits.pdf.

Finally, the jurisdiction must coordinate with the regional Texas Commission on Environmental Quality (TCEQ) office to get permission to use a site as a DMS in Texas. To apply for the TCEQ DMS permit, a map of the layout of the site will be needed to include access points, debris pile areas, grinder and/or trench burner location, location of office or trailer, etc. The form for seeking

TCEQ approval for temporary DMS, along with general guidelines for operating the sites, can be found at https://www.tceq.texas.gov/downloads/response/tceq-20660.pdf.

Documenting the Condition of the Site

After approval and before using the site as a DMS, the condition of the site should be documented.

- Photograph and/or video the site. Thoroughly videotape and/or photograph (ground or aerial) each site before beginning any activities.
- Periodically update the video and photographic documentation to track the progress of the site.
- Record physical features.
- Conduct a historical evaluation.
- If necessary, collect soil and water samples.

Residential Drop-Off (RDO) Sites

RDO sites might also be considered after a disaster. RDOs give residents the opportunity to self-haul their disaster debris to a managed staging area for future pick-up by jurisdiction crews or contractors.

The site address, hours of operation, and the types of debris accepted for disposal must be clearly communicated to the public. Monitoring staff would need to be on-site to direct traffic and to ensure that only eligible debris is accepted and that debris is managed safely.

4. ESTIMATING DEBRIS FOR DISASTER DECLARATION PURPOSES

Estimating debris quantities is an important part of the preliminary damage assessment process. Debris estimates, along with damage assessments, help determine whether disaster thresholds in a community have been met, the response and recovery resources required, the number and size of DMS needed, and the resources needed for the final disposition of the disaster-related debris. Debris estimates can be conducted using ground measurements, aerial and satellite photographs, and computer models.

Ground Debris Estimate Processes

To prepare to conduct ground debris estimates, it is helpful to have the following supplies:

- Digital camera or smartphone
- Measuring tape or wheel
- Calculator or smartphone
- GPS unit/phone
- Note paper
- Maps of the area
- Laser rangefinder
- Vehicle
- Safety supplies – Water, first aid kit, mosquito repellent

To assess the quantity of debris in a disaster area, assessors will find a street or area that represents the typical or average amount of debris for the affected area. They will then calculate the quantity of debris on that street or in that area. The quantity of debris on that street or in that area is then multiplied by the total number of streets or areas affected by the disaster to produce a total estimate of debris.

In calculating debris quantities, cubic yards are typically used. To calculate the cubic yard of debris from a pile of debris, approximate the debris piles using cubes. One cubic yard is about the size of a standard washing machine.

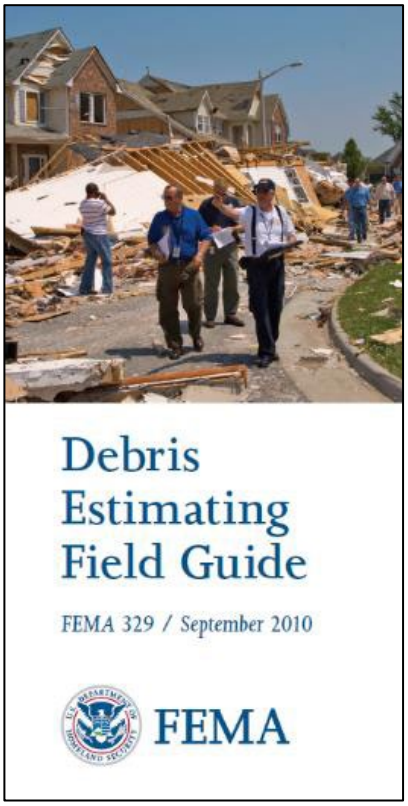


Figure 4-1: FEMA Debris Estimating Field Guide

Ground Measurement Considerations

Depending on how soon the estimate is taken, there may still be eligible debris inside the homes and in the yards of residences.

Eligible hanging limbs and dangerous trees should be included.

Ineligible debris (e.g., old tires, commercial debris, debris generated before the disaster) should NOT be counted in the estimate.

Ground Measurements – Piles

One acre of debris 10 feet high = 16,133 CY

$$\frac{43{,}560 \text{ Square Feet} \times 10 \text{ Feet}}{27} = 16{,}133$$

Ground Measurements – General Buildings Formula

Multiply building length, width, and height by a constant of .33 (to account for air space in the building) and divide by 27.

Measurements must be in feet.

$$\frac{\text{Length} \times \text{Width} \times \text{Height} \times .33}{27} = \text{CY}$$

Ground Measurements – Single Family Residence Formula

Multiply structure length, width, and number of stories by a constant of 0.20 and then by a vegetative cover multiplier (VCM).

Length and width must be in feet.

$$\text{Length} \times \text{Width} \times \text{Stories} \times 0.20 \times \text{VCM} = \text{CY}$$

VCM Light, 1.1 multiplier

More ground is visible than trees. Common to newer subdivisions. (Neighborhood in League City).

VCM Medium, 1.3 multiplier

Uniform pattern of open space and tree canopy cover

This is the most commonly used multiplier. (Lazybrook subdivision in Houston).

Heavy, 1.5 multiplier

The ground or houses cannot be seen due to the tree canopy cover. (Memorial area of Houston)

Aerial or Satellite Estimates

Aerial estimates are helpful when:

- Estimates are needed quickly.
- The debris field is large, and it is difficult to gauge quantities from the ground.
- Ground measurements or computer models require validation.

Obtain pictures and satellite images of both before and after the disaster.

Select an object of reference with known dimensions, such as a vehicle or structure, to

establish a dimensional scale, then apply the dimensional scale to determine the size of objects in the photo.

Computer Models

Computer models designed to aid in conducting debris estimates include the following:

HAZUS-MH Software. HAZUS is a free program developed by FEMA to assess potential losses from earthquakes, floods, hurricanes, and tsunamis. In addition to estimating debris quantities, it also helps communities estimate damage, economic losses, and social impacts from natural disasters, aiding in disaster preparedness and mitigation planning. HAZUS combines scientific and engineering knowledge with GIS technology to provide a comprehensive risk assessment framework. To use HAZUS, users must have ArcGIS with an ArcView license level.[11]

HURREVAC. Short for Hurricane Evacuation, HURREVAC is a storm tracking and decision support tool developed by the U.S. Army Corps of Engineers. It can be used to track storms, look at projections for a storm's path, and determine areas to be impacted. First and foremost, it is a tool to aid in evacuation.[12]

EPA Incident Waste Management Planning and Response Tool (IWMPRT) Waste Materials Estimator. This tool was developed to provide emergency planners and responders with the ability to generate order-of-magnitude weight and volume estimates of common items and materials found inside various types of building structures that may require decontamination and/or disposal.[13] An individual can enter information into the tool regarding the number and types of structures in the affected area to get an estimate of the types and quantities of debris from the structures in that area.

[11] HAZUS website: https://www.fema.gov/flood-maps/products-tools/hazus
[12] HURREVAC website: https://www.hurrevac.com/
[13] Waste Materials Estimator website: https://iwaste.epa.gov/waste-materials-estimator

5. STRATEGIC PLANNING WITH ELECTED OFFICIALS

Strategic planning with elected officials during disaster debris operations is needed to ensure an effective and efficient response and recovery from a disaster. Elected leaders might have to approve contracts, establish policies, address the needs of constituents, respond to media inquiries, and be involved in other aspects of recovery operations that could have a significant effect on disaster debris operations. In addition, without some level of cooperation between elected officials and disaster debris managers, there is a risk that competing priorities between responders and elected officials could hinder or delay disaster debris operations and the overall recovery of the community.

Steps to Enhance Strategic Planning with Elected Officials

Enhancing strategic planning with elected officials can start long before a disaster occurs in the preparedness and mitigation process.

1. Engaging elected leaders in preparedness and mitigation planning can help elected leaders be aware of the hazards faced in the community and the actions that are being taken to prepare for or mitigate those hazards. It might also include providing elected officials with a comprehensive risk assessment when elected or appointed and providing regular updates to elected officials on the status of plan development and/or plan updates and the key priorities listed in those plans.
2. During response and recovery operations, providing regular updates to elected leaders and providing an ongoing dashboard showing the amount of debris that has been collected, from what communities it has been collected, the number of passes that have been made through communities, and priorities moving forward, can help them to be engaged in the process as well as assist them in answering questions from constituents.
3. Collaborating with elected officials, other affected departments, and jurisdictions in the development and dissemination of public information messages can help to ensure a timely, accurate, and consistent message is communicated to the public. Sharing these messages with elected leaders prior to the public and media (when possible) can help eliminate the element of surprise when elected leaders are asked by the media to respond to messages from the jurisdiction that they have not yet seen.
4. Making sure elected officials have a good understanding of key response and recovery concepts, including:

    - The process for requesting resources
    - The use of the financial and in-kind assistance programs that will help both community members and the government
    - The importance of procedures for documenting hours and expenses
    - Clear communication with community members, including setting realistic expectations to help instill trust and confidence during the recovery process
    - Enforcement of all codes and regulations during the recovery process
    - Participation in after-action meetings to learn what needs to be improved and to reinforce those practices that went well during the response and recovery process

Hazard mitigation plans and threat and hazard identification and risk assessments can help officials to understand the potential hazards and actions to mitigate them. They can also play a key role in hazard mitigation measures through:

- Acquiring property in flood-prone areas to prevent development
- Elevating structures in flood-prone areas
- Constructing safe rooms as shelter from hurricanes, tornadoes, and other severe weather
- Implementing hazard-resistant building codes and mitigation projects
- Reducing insurance costs and instituting land planning by participating in the National Flood Insurance Community Rating System

Having elected officials participate in training and exercises offers an opportunity to gain greater familiarity with their local emergency plans, authorities, response and recovery approaches, and roles. Exercises will also help officials understand jurisdictional shortfalls and strengths.

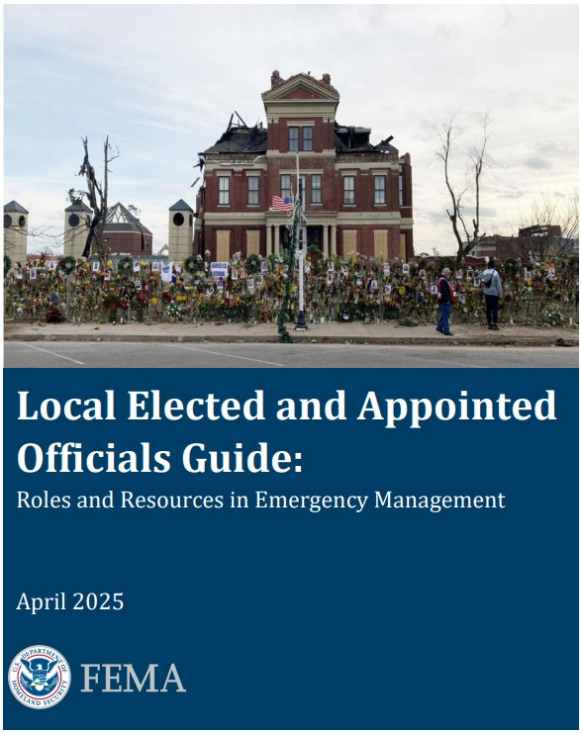


Figure 5-1: Local Elected and Appointed Officials Guide

In addition, keeping elected officials informed promotes transparency and trust. Regular updates on sensitive issues and their status allow elected officials to stay ahead of media reporting and provide consistent messages to both the media and their constituents.

Tips for coordinating with elected officials in emergency management can be found in the Local Elected and Appointed Officials Guide, Rules and Resources in Emergency Management by FEMA:

https://www.fema.gov/sites/default/files/documents/fema_npd_local-elected-officials-guide_2025.pdf

6. PUBLIC INFORMATION STRATEGIES

The objective for public information in disaster debris operations is to provide timely, accurate, and consistent information to improve understanding and cooperation, thereby increasing the efficiency of debris management operations while minimizing disruption to the public. In disaster debris operations, public information needs to be communicated regarding:

- **Set-out procedures:** When, where, and how to place debris for collection.
- **Safety precautions:** Hazards associated with debris, proper handling, and disposal methods.
- **Eligible debris:** What types of debris will be collected and how to separate them for collection.
- **Debris operations status:** Updates on the status of operations and what the public should expect.
- **RDO sites:** The location and hours of operation of RDO sites and what types of debris can be dropped off.

Preparation Messages

Prior to an incident, if it is known that a debris-generating incident is imminent, along with the severe weather safety warnings, messages can be communicated about securing loose items in yards to prevent them from becoming airborne and causing injuries and damage. Messages might also be communicated regarding storm drains and for residents to ensure they are clear of debris so water can be channeled away from homes and businesses.

The H-GAC website has helpful graphics, such as the ones shown below, to help communicate these messages.

Figure 6-2: Prevent Projectiles Graphic

Figure 6-2: Clear Storm Drains Graphic

Set-Out Procedures

The set-out procedures must be communicated as soon as possible after a disaster. In some cases, it might be possible to push this information before a disaster if a hurricane or other debris-generating incident is imminent. Some set-out information to include in the public messaging includes:

- Debris should be staged separately by debris type along the right-of-way.
- Do not bag debris; only loose debris will be collected.
- Do not mix household hazardous waste (HHW) with any of the other staged debris types.
- Do not mix household garbage with any of the other staged debris types.
- Do not place debris near fire hydrants, or any other above-ground utility.
- Do not place debris on driveways.

The H-GAC website has graphics to help communicate these messages as well, such as the ones shown below.[14]

Figure 6-3: Debris Separation Graphic

[14] H-GAC Disaster Debris Publications Website, https://www.h-gac.com/community-and-environmental-planning-publications/disaster-debris

Figure 6-4: Do Not Bag Debris Graphic 1

Figure 6-5: Do Not Bag Debris Graphic 2

Debris Operations Updates and Information

Additional information to be communicated during disaster debris operations includes progress made in debris collection, the expected duration of collection (which can take weeks or months depending on the severity of the disaster), and the need for multiple passes through neighborhoods as residents move debris from their homes to the right-of-way.

Figure 6 6: Debris Operation Timeline Graphic

Also, because the various types of debris are ultimately taken to different places for recycling or disposal, one truck may only be picking up one type of debris. An example is one truck may only be collecting vegetative debris to take to a DMS to be converted into mulch, while another truck may be collecting white goods to be recycled.

Residents may not understand why a truck does not pick up all the debris at the same time. This information should be communicated to residents, so they have a better understanding of debris operations. The H-GAC website has helpful graphics, such as the one shown on this page, to help communicate these messages.

Coordination of Public Information

Public information should be coordinated and integrated across jurisdictions and organizations involved in the incident, including federal, state, tribal, and local governments; private-sector entities; and non-governmental organizations. This is so the information will be consistent, especially because affected jurisdictions might share news media outlets. In addition, there might be overlaps in jurisdictions, such as a city that stretches across two counties.

Access and Functional Needs Populations

To reach those with access and functional needs, be prepared to disseminate information to all audiences, including those with disabilities, access and functional needs, or language requirements. Have materials translated into common non-English area languages and utilize other formats, such as captioning and American Sign Language, as needed. A public information officer might also establish contacts to translate emergency information and coordinate with local media resources to reach specific audiences.

Controlling Public Information

To control the flow of public information, jurisdictions need to provide regular updates on the progress of debris operations as well as establish realistic expectations on the timing of debris operations. To capture as wide an audience as possible, all avenues of public information should be used, including the jurisdiction's website, news media, social media, and municipal channels.

Social media can be effective for communicating with the public, but some individuals might use it to spread misinformation. Social media should be monitored for misinformation and corrected as needed.

Also, it is important to understand that some members of the press will aggressively pursue a story. Work with them to help them meet deadlines as much as possible.

Public Information by Phase of Disaster Debris Operations

Below are actions that can be taken by phase of disaster debris operations to enhance public information.

- **Preparedness Public Information Tasks**
  - Maintain contact information pertaining to staff, news media, and response partners.
  - Maintain and update social media sites and websites regularly.
  - Conduct drills and exercises to test contact information, communications systems, and communication processes.
  - Provide training to ensure the spokespersons are adequately trained and prepared to speak to the media.
  - Prepare pre-scripted messages.

- **Response Public Information Tasks**
  - Provide instructions to the public regarding proper set-out procedures.
  - Provide safety messages in coordination with health authorities and other response partners.
  - Set up a call center to answer questions from the public.

- Monitor media coverage and social media posts.
- Correct any misinformation.

- **Recovery Public Information Tasks**
  - Provide the status of debris operations.
  - Provide instructions to the public regarding how debris will be managed going forward.
  - Monitor social media posts.
  - Correct any misinformation.
  - Express gratitude to residents for their cooperation.
  - Participate in any debriefing of the event.
  - Notate lessons learned for plan improvement.

7. RECYCLING AND DISPOSAL

Disaster debris, if not properly managed, has the potential to severely shorten the lifespan of landfills serving communities affected by disaster. To prevent disaster debris from severely impacting landfills, strategies to divert debris from landfills are implemented as much as possible. What cannot be diverted may be reduced through burning, grinding, or compaction.

The EPA issued guidance called the Management Options for Materials and Wastes from Disasters.[15] This guidance introduces the Waste Management Hierarchy, which illustrates the preferred methods of managing disaster debris: source reduction and reuse as the most preferred, followed by recycling/composting, energy recovery, and finally treatment and disposal.

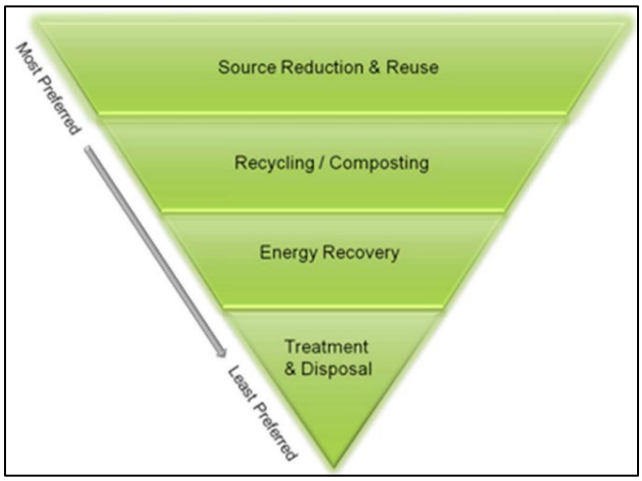


Figure 7-1: Waste Management Hierarchy

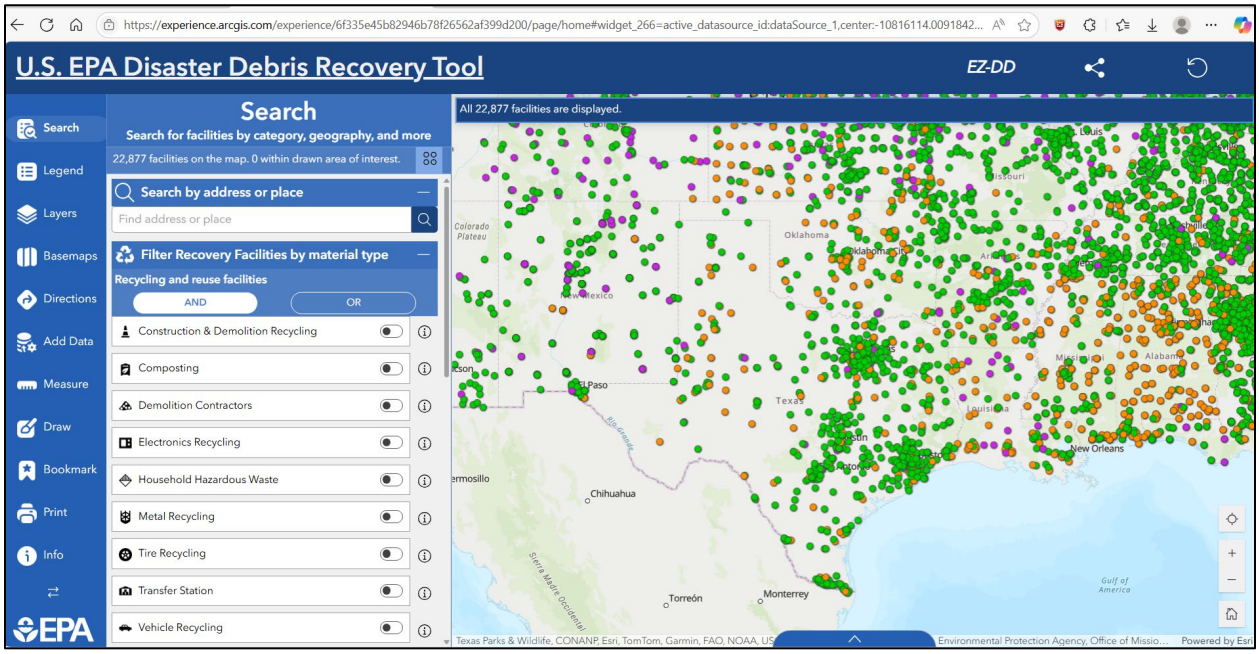
Source reduction involves reducing the quantity of potential debris that may be generated by a disaster before a disaster occurs. This can include measures such as preventing building in flood zones by updating building codes and enforcing nuisance abatement codes.

Reuse, on the other hand, involves reusing disaster debris materials in their original form. This can include relocating undamaged buildings and deconstructing structures so the materials can be reused for other purposes, such as using salvaged lumber to build a fence or flowerbeds.

Recycling is the process of collecting and processing materials that would otherwise be disposed of as waste and using the materials for new products. Some common recycled disaster debris can include metals, asphalt, concrete, white goods, electronics, and vegetative debris. The TCEQ lists resources for recycling on their website at https://www.tceq.texas.gov/p2/recycle. In addition, the EPA's Disaster Debris Recovery Tool[16] provides information and locations of facilities capable of managing different materials and waste that may be found in disaster debris. It features a filterable map that makes it easy to search for facilities that can recycle different types of materials near a particular jurisdiction. A snapshot of the tool is provided on the next page.

[15] Management Options for Materials and Wastes from Disasters, EPA, https://www.epa.gov/disaster-debris/management-options-materials-and-wastes-disasters#:~:text=On%20this%20page:,water%20system%20with%20drain%20covers.
[16] U.S. EPA Disaster Debris Recovery Tool, https://www.epa.gov/disaster-debris/disaster-debris-recovery-tool

Figure 7-2. Snapshot of the EPA Disaster Debris Recovery Tool



Composting is a process that involves combining organic wastes in proper ratios into piles, rows, or vessels, adding bulking agents (e.g., wood chips) as necessary to accelerate the breakdown of organic materials and allowing the finished material to fully stabilize and mature through a curing process.[17] Compost facilities can utilize ground vegetative debris, food, and animal carcasses to produce compost, which can be used as a nutrient for soil.

Energy recovery converts waste that would otherwise be landfilled to produce energy. Waste-to-energy facilities burn material, such as municipal solid waste, to generate electricity. While these facilities are operated in other parts of the country, there are none currently operating in Texas, although there are plans for future facilities.

Biomass facilities convert organic waste, including wood, agricultural residues, dedicated energy crops, and even food waste, to electricity. There are two facilities in East Texas, near Lufkin and Nacogdoches, that can convert wood to energy. Coordination would be needed with these facilities to determine whether they could accept vegetative debris, if the mulch must be a particular size, and any other considerations. Debris managers would also need to consider the cost of transportation of the materials to those sites to determine whether it is a cost-effective measure.

[17] Management Options for Materials and Wastes from Disasters, EPA, https://www.epa.gov/disaster-debris/management-options-materials-and-wastes-disasters#:~:text=On%20this%20page:,water%20system%20with%20drain%20covers

Treatment and disposal of debris involves reducing the debris before disposal. Three ways of reducing debris are:

Incineration

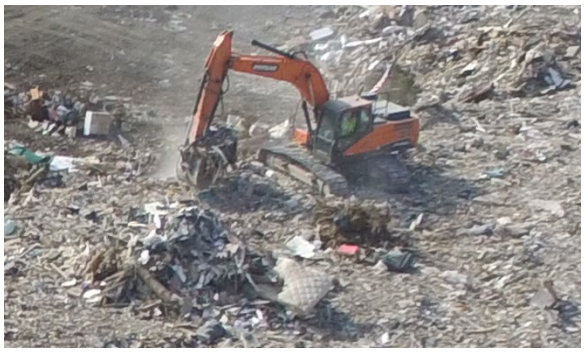
Burning vegetative debris in an air curtain incinerator requires approval from the Fire Marshal/Department and the TCEQ due to air quality concerns. Burning vegetative debris typically results in a reduction ratio of 20:1. The leftover ash may be hauled to a final disposal facility or incorporated in a land application.

Chipping and Grinding

Using this method, vegetative debris is chipped or ground and typically results in a reduction ratio of 4:1. The leftover mulch is either hauled to a final disposal facility or recycled.

Crushing

Crushing vegetative debris is the least effective reduction method and results in a reduction ratio of 2:1. Crushing is an appropriate reduction method for C&D debris that cannot be recycled.



In preparation for disaster debris operations, examine the hazards the jurisdiction is vulnerable to and forecast the potential debris types and amounts. Then develop a resource list of facilities that could aid in recycling or disposing of the debris. Include these facility representatives in planning, and if needed, arrange for agreements to take certain types of debris in a disaster.

APPENDIX A
ACRONYMS

C&D Debris	Construction and Demolition Debris
CFR	Code of Federal Regulations
CY	Cubic Yards
DDMP	Disaster Debris Management Plan
DMOC	Debris Management Operations Center
DMS	Debris Management Site
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GIS	Geographic Information Systems
GPS	Global Positioning System
HAZMAT	Hazardous Materials
H-GAC	Houston-Galveston Area Council
HHW	Household Hazardous Waste
IWMPRT	Incident Waste Management Planning and Response Team
OFCCP	Office of Federal Contract Compliance Programs
OSHA	Occupational Safety and Health Administration
PA	Public Assistance
PDAT	Procurement Disaster Assistance Team
RDO	Residential Drop-Off
SAM	System for Award Management
SDO	Suspension and Debarment Official
STAR	State of Texas Assistance Request
State	The State of Texas
TCEQ	Texas Commission on Environmental Quality
TDEM	Texas Division of Emergency Management
THC	Texas Historical Commission
USACE	United States Army Corps of Engineers
VCM	Vegetative Cover Multiplier

APPENDIX B
DDMP CHECKLIST

Disaster Debris Management Plan Checklist				
Yes	No	Needs Updating	Plan Requirements	Comment
			Overview – Does the plan describe the purpose and objectives?	
			Events and Assumptions – Does the plan provide information on the types and anticipated quantities of debris that will be generated from various types and sizes of events?	
			Debris Collection and Removal – Does the plan have a debris collection strategy? Does the plan discuss the methods that will be used to remove debris and establish priorities for clearance and removal? Does the plan outline the roles and responsibilities of the various functions involved (Public Works, Finance, and Solid Waste Departments, etc.)?	
			Debris Disposal Locations and Debris Management Sites – Does the plan identify where the disaster debris will be segregated, reduced, and disposed or whether debris will be hauled to a recycler?	
			Debris Removal on Private Property – Does the plan address the authority and processes for private property debris removal?	

Disaster Debris Management Plan Checklist				
Yes	No	Needs Updating	Plan Requirements	Comment
			Use and Procurement of Contracted Services – Does the plan describe the types of debris operations that will be contracted? Does the plan describe the process and procedure for acquiring competitively procured contracted services?	
			Use of Force Account Labor – Does the plan define the types of work that force account labor will accomplish?	
			Monitoring of Debris Operations – Does the plan describe who and how debris removal contractors will be monitored at pickup sites, debris management sites/temporary debris storage and reduction sites, and final disposal?	
			Health and Safety Requirements – Does the plan describe how workers and the public will be protected and discuss the specific measures for adherence to safety rules and procedures?	
			Environmental Considerations and Other Regulatory Requirements – Does the plan identify all debris operations that will trigger compliance with environmental and historic preservation laws and how compliance will be attained?	
			Public Information – Does the plan include a public information strategy to ensure that residents receive accurate and timely information about debris operations?	

Disaster Debris Management Plan Checklist				
Yes	No	Needs Updating	Plan Requirements	Comment
			Identification of Debris Removal Contractors – Does the jurisdiction identify at least one or more debris contractors that it has prequalified?	

APPENDIX C
JOB AID CHECKLISTS FOR KEY POSITIONS

Debris Manager	
Position Description:	The Debris Manager oversees disaster debris management operations in accordance with the Disaster Debris Management Plan (DDMP) as well as local, regional, state, and federal regulations
Reports To:	Emergency Management and Solid Waste
Responsibilities:	☐ Establish a Debris Management Operations Center (DMOC). ☐ Activate contractors for debris clearing and debris monitoring services. ☐ Establish priorities for debris management operations. ☐ Collaborate with federal, state, and other agency representatives. ☐ Provide updates to Emergency Management regarding debris management operations. ☐ Coordinate with Communications and Media to develop public information messages regarding debris operations. ☐ Coordinate with Community Development/Grants Management in the tracking of debris management costs. ☐ Coordinate the demobilization of debris management operations.

Street-Clearing Task Force Leader	
Position Description:	The Street-Clearing Task Force Leader oversees street-clearing operations immediately following a disaster to ensure emergency vehicles and utility restoration crews can access and traverse roads in conducting emergency response operations.
Reports To:	Debris Manager
Responsibilities:	☐ Stage and ready resources immediately prior to an expected incident to ensure they will be fueled and ready to activate in the event they are needed to clear debris off jurisdiction streets. ☐ Oversee street-clearing immediately following a debris-generating incident. ☐ Coordinate local and contract resources to clear streets of debris in accordance with established objectives and priorities. ☐ Track the progress of street-clearing operations. ☐ Provide regular updates to the Debris Manager regarding the status of operations. ☐ Coordinate with the Safety Officer assigned to the incident to ensure street-clearing operations are conducted in a safe manner. ☐ Ensure all hours, expenses, and equipment use are accurately documented.

Debris Collection and Disposal Task Force Leader	
Position Description:	The Debris Collection and Disposal Task Force Leader oversees debris collection and disposal operations.
Reports To:	Debris Manager
Responsibilities:	☐ Coordinate with local and contract resources to stage and ready resources immediately prior to an expected incident to ensure these will be fueled and ready to activate in the event they are needed to collect debris. ☐ Coordinate with the debris monitoring contractor to conduct truck certifications. ☐ Coordinate local and contract resources to conduct debris collection operations in accordance with established objectives and priorities. ☐ Coordinate with the debris monitoring contractor to conduct collection, DMS, and disposal site monitoring. ☐ Activate DMS locations as needed in coordination with relevant departments and agencies. ☐ Coordinate with Environmental Health to conduct soil sampling at DMS locations prior to and after closure of DMS. ☐ Coordinate with local labor and contractors to ensure debris is recycled or disposed of in accordance with regulatory guidelines. ☐ Coordinate local and contract resources to conduct special debris operations, including dangerous trees, privately owned vehicles and vessels, waterway debris removal, parks debris removal, and private property debris removal in accordance with FEMA authorization and guidelines. ☐ Track the progress of debris collection, recycling, and disposal in coordination with the debris monitoring contractor. ☐ Provide regular updates to the Debris Manager regarding the status of operations. ☐ Coordinate with the Safety Officer to ensure debris collection and disposal operations are conducted in a safe manner. ☐ Ensure all hours, expenses, and equipment use are accurately documented.

Environmental Health Task Force Leader	
Position Description:	The Environmental Health Task Force Leader monitors the impacts of debris operations and liaises with regional, State and Federal environmental agency representatives.
Reports To:	Debris Manager
Responsibilities:	☐ Liaise with regional, state, and federal environmental agencies and contractors to monitor the environmental impacts of debris management operations, including air, soil, and asbestos monitoring. ☐ Coordinate with the Debris Collection and Disposal Task Force Leader, or designee, to conduct soil sampling at DMS locations prior to and after closure of DMS. ☐ Track the progress of environmental monitoring and testing operations and document results. ☐ Provide regular updates to the Debris Manager regarding the status of environmental monitoring operations. ☐ Coordinate with the Safety Officer to ensure environmental monitoring operations are conducted in a safe manner. ☐ Ensure all hours, expenses, and equipment use are accurately documented.

Debris Clearing Teams	
Position Description:	The Debris Clearing Teams conduct street-clearing immediately following a disaster to ensure emergency vehicles and utility restoration crews can access and traverse roads in conducting emergency response operations.
Reports To:	Street-Clearing Task Force Leader
Responsibilities:	☐ Coordinate through the Street-Clearing Task Force Leader to divide into teams and clear streets of debris in accordance with established objectives and priorities. ☐ Report any hazardous conditions, such as downed power lines, hazardous materials spills, and natural gas leaks, to the proper authorities as well as the Street-Clearing Task Force Leader. ☐ Track the progress of the Task Force in street-clearing operations. ☐ Provide updates as required to the Street-Clearing Task Force Leader regarding the status and progress of the team. ☐ Obey the health and safety policy and follow health and safety guidance in conducting street-clearing operations. ☐ Ensure all hours, expenses, and equipment use are accurately documented.

Debris Removal Teams	
Position Description:	The Debris Removal Teams conduct debris collection and disposal operations.
Reports To:	Debris Collection and Disposal Task Force Leader
Responsibilities:	☐ Coordinate through the Debris Collection and Disposal Task Force Leader to divide into teams consisting of debris removal and debris monitors to collect debris and deliver it to the appropriate location for reduction, recycling, or disposal. ☐ Report any hazardous conditions, such as downed power lines, hazardous materials spills, and natural gas leaks, to the proper authorities as well as the Debris Collection and Disposal Task Force Leader. ☐ Provide updates as required to the Debris Collection and Disposal Task Force Leader regarding the status and progress of the team. ☐ Obey the health and safety policy and follow health and safety guidance in conducting debris removal, reduction, and disposal operations. ☐ Ensure all hours, expenses, and equipment use are accurately documented.

APPENDIX D
DEBRIS MANAGEMENT CHECKLISTS

Normal Operations Checklist

- ☐ Update contact lists.
- ☐ Evaluate debris management sites (DMS).
- ☐ Review road list and road maps.
- ☐ Establish and maintain prepositioned contracts.
- ☐ Review FEMA guidance.

Completed By: _____

Date Completed: _____

Pre-Incident Checklist

- ☐ Download the most recent road list and relevant documents to a portable storage device.
- ☐ Alert key personnel and place monitoring firm and debris removal contractors on stand-by.
- ☐ Review plan with key personnel.
- ☐ Issue pre-event public information messages.

Completed By: _____

Date Completed: _____

Post-Incident Response Checklist

- ☐ Conduct damage assessment.
- ☐ Establish a Debris Management Operations Center (DMOC).
- ☐ Activate monitoring firm and debris removal contractors.
- ☐ Begin emergency roadway debris clearance.
- ☐ Begin truck certification.
- ☐ Prepare DMS based on concentration of debris.
- ☐ Conduct meetings/briefings with key personnel.
- ☐ Review debris volume and collection cost assessment.
- ☐ Request contact information and meeting with FEMA Public Assistance Program Delivery Manager (PDMG).
- ☐ Issue public information messages.

Completed By: _____

Date Completed: _____

Post-Incident Recovery Checklist: 2 Days – 2 Weeks

- ☐ Open debris management site (DMS).
- ☐ Prioritize roads/areas.
- ☐ Issue public information messages regarding segregation of debris.
- ☐ Begin right-of-way debris removal.
- ☐ Perform parks damage assessment.
- ☐ Begin environmental monitoring program of DMS.
- ☐ Coordinate with external agencies.
- ☐ Initiate discussions with FEMA.
- ☐ Obtain FEMA guidance for gated community and private property debris removal.

Completed By: _____

Date Completed: _____

Post-Incident Recovery Checklist: 2 Weeks – 1 Month

- ☐ Maintain and evaluate right-of-way cleanup.
- ☐ Begin right-of-way stump removal, as necessary.
- ☐ Open additional debris management sites (DMS), as necessary.
- ☐ Continue daily meetings with FEMA.
- ☐ Begin debris removal from private property and gated communities.
- ☐ Communicate project close-out public information messages.

Completed By: _____

Date Completed: _____

Post-Incident Recovery Checklist: 1 Month – 3 Months

- ☐ Maintain and evaluate right-of-way cleanup.
- ☐ Begin dangerous trees and stumps program.
- ☐ Initiate haul-out.
- ☐ Progress to weekly meetings withFEMA.

Completed By: _____

Date Completed: _____

Post-Incident Recovery Checklist: 3 Months – Project Completion

- ☐ Complete all debris recovery activities.
- ☐ Identify ineligible debris on the right-of-way.
- ☐ Complete the disposal of reduced debris.
- ☐ Close out and remediate debris management sites.
- ☐ Conduct project close-out meetings with FEMA and external agencies.

Completed By: _____
Date Completed: _____

APPENDIX E
DEBRIS CONTRACTOR CHECKLIST

The Disaster Debris Contract Checklist was designed to guide jurisdictions in contracting disaster debris services. The checklist provides a step-by-step process to procuring disaster debris services that comply with current federal standards and best practices. The checklist includes the steps to solicit bids, review proposals, and select an appropriate contractor. The checklist was developed using guidance set forth by FEMA and the provisions of Title 2 CFR Part 200 General Procurement Standards.

Table 1: Disaster Debris Contract Checklist

Task	Responsibility	Completion Date
Pre-Disaster Tasks		
Solicit a request for proposals for disaster debris services.		
The solicitation for prequalified contractors should include: ■ Adequately defined scope of work ■ All potential debris types ■ Anticipated haul distances ■ Potential size of debris events ■ Hourly labor, equipment, and material price schedule ■ Performance bond requirements		
Qualify bidders by requesting documentation of the following: ■ Licenses ■ Financial stability ■ Proof of insurance ■ Bonding capability ■ Description of related experience and capabilities, including total verified cubic yards removed and processed ■ References including jurisdiction name, point of contact, email address, and phone number ■ Description of health and safety plan, including operation plan at DMS		
Contractors that have been declared debarred by the Office of Federal Contract Compliance Programs (OFCCP) **should not be considered.** A complete list of federally debarred contractors can be found in the System for Award Management (SAM) dataset at www.sam.gov. Check the status of prequalified contractors in the SAM database **at the time of the disaster.** ■ Go to the SAM Database at https://www.sam.gov/portal/public/SAM/. ■ Under the Search Records tab, enter a DUNS number, CAGE code, or Business Name to search for the contractor you are interested in pre-qualifying. ■ Note any exclusions listed for the contractor that may prohibit federal assistance for debris services. ■ Print the screen with the results and file in records.		
Ensure compliance with the jurisdiction's procurement procedures.		

Task	Responsibility	Completion Date
Ensure compliance with applicable state and local procurement laws and regulations.		
Ensure compliance with federal procurement laws and standards identified in 2 CFR Part 200.		
Ensure there is competition in the selection of contractors in compliance with 2 CFR 200.		
Provide a clear and definitive scope of work.		
Develop a cost analysis to demonstrate cost reasonableness **for any contract or contract modification where price competition is lacking**.		
Ensure opportunities for minority and women-owned businesses and firms whenever possible. Require prime contractors to utilize minority and women-owned businesses as scope allows per the provisions laid out in 2 CFR Part 200.		
Document the process and rationale the jurisdiction followed in making procurement decisions.		
The jurisdiction's legal counsel should conduct a review of the procurement process and any potential contracts to be awarded to ensure compliance with all federal, state, and local requirements.		
Establish procedures to address protests and disputes related to contract awards.		
Compile all documentation related to the procurement and file in a secure location that can be accessed for future review.		

APPENDIX F
DEBRIS MANAGEMENT SITE CHECKLIST

Investigation of Property Suitability

DEBRIS MANAGEMENT SITE (DMS)

PROPERTY NAME:

DATE OF SITE INVESTIGATION:

OWNERSHIP OF PROPERTY (CHECK ONE): Municipal Property ☐ County Property ☐ Private Property ☐ Other Ownership (describe) ☐

PROPERTY ADDRESS:

COORDINATES:

PROPERTY OWNER'S NAME:

PROPERTY POINT OF CONTACT:

PROPERTY POINT OF CONTACT PHONE NUMBER:

PROPERTY POINT OF CONTACT E-MAIL ADDRESS:

ESTIMATED PROPERTY SIZE:

CHARACTERIZATION OF NEIGHBORING PROPERTIES	
EVALUATION FACTOR	**COMMENTS**
Property current land use	
Any proposed future land uses	
Environmental considerations	
Historical considerations	
Located in a flood plain	
Zoning considerations	
Proximity to schools, churches, and community centers	
Property topography	
Open water sources	
Groundwater wells	
Access to electricity, sewer, and water	
Soil integrity	
Water Sampling	
Surface water drainage	
Prevailing wind direction*	
Ingress/egress	
Lighted area	
Site security	
Buffer distance for noise control	
Property development	
Property adjacent to airport/airfield	
Site able to handle large volume of trucks	

SITE PREPARATION: High_____ Medium_____ Low_____

SUITABILITY TO WET WEATHER: High_____ Medium_____ Low_____

ABILITY TO SERVE A SPATIAL AREA: High_____ Medium_____ Low_____

SITE ACCEPTABILITY FOR WHAT TYPE OF REDUCTION METHOD (CHECK APPLICABLE METHOD(S)):

Open Burning: Yes/No

Air Curtain Incineration: Yes/No

Grinding: Yes/No

THIS SITE WILL BE RECOMMENDED FOR:

_____C&D

_____Vegetative

_____Both C&D and Vegetative

_____White Goods

_____Other (Describe_____)

POTENTIAL LAYOUT OF SITE: