

Commonwealth Of Massachusetts All Hazards Disaster Debris Management Plan

REVISION #3

Annex to the State Comprehensive Emergency Management Plan

Note: This plan describes the roles and responsibilities that state agencies will play, and the actions they will take, with respect to managing disaster debris in the event that the Commonwealth declares a state of emergency. Local emergency planning and response officials should be familiar with this plan, as it is intended to complement local planning and response activities. In addition, local planning and disaster debris management activities should be consistent with this plan to maximize the efficiency and effectiveness of these activities.

Massachusetts Emergency Management Agency

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1.0 INTRODUCTION

This plan updates the previous Disaster Debris Management Plan (dated October 2002) and modifies the earlier Plan to serve as an All Hazards Debris Management Plan. This plan anticipates and plans for debris management needs that may result from any type of disaster event that could create unusual or extensive debris management challenges that would temporarily overwhelm existing solid waste, recycling, and composting programs. The types of disaster events that this plan addresses include natural disasters such as hurricanes, tornados, floods, and earthquakes; animal or human infectious diseases; acts of terrorism; and facility specific chemical spills or fires. Different types of disasters can pose very different debris management challenges depending on the amount, scope, and types of debris generated.

A significant percentage of Federal Emergency Management Agency (FEMA) disaster relief funds are spent on disaster debris related activities. Beyond the high cost of cleaning up debris after a major disaster, large amounts of debris threaten public health and safety by harboring rodents and disease; pose fire hazards; and block road access for emergency vehicles, vital supply vehicles, and repair equipment. Commencement of clean-up operations improves general sanitation and signals the beginning of recovery and the restoration of public order.

This All Hazards Debris Management Plan is an annex to the [Massachusetts Comprehensive Emergency Management Plan \(CEMP\)](#). This annex provides a framework for organizing the rapid, safe, and cost effective separation, removal, collection, recycling and disposal of disaster related debris; and minimizing debris-related threats to public health, safety, and the environment following an event or a major disaster.

Implementation of the All Hazards Debris Management Plan will be coordinated by the Massachusetts Emergency Management Agency (MEMA), utilizing State agencies working in Emergency Support Functions (ESF) as outlined in the CEMP.

The Debris Plan also seeks to provide guidance to local communities to better manage disaster debris removal, diversion, and disposal, in conjunction with the efforts of State agencies.

1.1 Purpose

The All Hazards Debris Management Plan is primarily designed for situations where municipal or regional resources are unable to adequately manage disaster-related debris. In such instances, MEMA would initiate the All Hazards Debris Management Plan in part or total, to task State resources and identify debris storage and processing facilities and systems. However, the Debris Plan is also intended to guide local government debris management, even when state assistance is not required. The All Hazards Debris Management Plan has a two-part purpose:

1. To provide coordinated, temporary, focused, limited State assistance and direction after a State Emergency Declaration to local municipalities who have fully committed their local resources, but still require assistance clearing and safely managing disaster related debris.

2. To provide a policy framework for municipalities to develop and improve local planning and response for disaster debris management.

1.2 Authority

The Massachusetts Emergency Management Agency is responsible for coordinating all aspects of disaster and emergency management as outlined in the Massachusetts Civil Defense Act, Chapter 639 of the Acts of 1950, Codified, Appendix 33. Additionally, Massachusetts Executive Order 144, September 27, 1978 directs State agencies to provide personnel and resources at MEMA's volition to enhance coordinated response.

The Massachusetts Department of Environmental Protection (MassDEP) is responsible for determining necessary waste disposal capacity as set out in the Solid Waste Act of 1987, M.G.L. Chapter 16, Section 21. MassDEP's [Solid Waste Master Plan](#) provides a hierarchy of waste management alternatives that maximize recycling and minimize disposal of waste and ensure that waste that does need to be disposed is safely managed in order to protect the public health, safety and the environment and reduce pressure on limited in-state disposal capacity. Following a major disaster, emphasis will be placed on recycling, composting, and otherwise diverting debris from disposal to the greatest extent possible. The Debris Plan also emphasizes the need to safely manage different types of debris, including infectious waste and hazardous materials, in a manner that will protect public health and the environment, while enabling communities to return to pre-disaster conditions as quickly as possible.

1.3 State Emergency Declaration

Under a gubernatorial State of Emergency Declaration, the Governor normally issues an Executive Order which directs State agencies to take such actions as may be necessary to assist affected areas in repairing, restoring and protecting public and private facilities and to provide such other emergency assistance as would protect the public health and safety.

Frequently, in the aftermath of a disaster, municipalities and public utilities remove large quantities of debris as part of their efforts to restore services. When a State Emergency is declared, State agencies may be directed to assist in those efforts. If that occurs, their activities will be conducted in accordance with the policies described below. However, the approach and strategies in this Plan should be applied to a variety of situations that generate large amounts of debris, whether or not there is a declared State of Emergency.

1.4 Criteria for Committing State Resources

The following criteria will be considered in determining whether to commit state resources to assist with debris management activities:

- There must be an imminent threat to public safety.
- Local government must have declared local emergency.

- Local resources must be exhausted, including activating mutual aid agreements with other municipalities and hiring of private emergency contractors (imminent threat must still exist after local assets working for 72 hours).

In addition, MEMA should confirm the presence of local mutual aid agreements and include utility companies and the Massachusetts Highway Department in making the decision to activate the Debris Plan.

1.5 Debris Clearance Policy and Procedures

With respect to debris clearance and removal, the State's policy following a State Emergency Declaration is as follows:

- State resources may be utilized to perform temporary repairs and/or clear debris from impacted roadway surfaces and other public property when local resources have been depleted. The permanent repairs and/or removal of the cleared debris and ultimate storage and/or disposal is the responsibility of the affected governmental entity. (Clearance means that roads/lanes are passable for emergency vehicles; debris may be in the highway right-of-way. Removal means that debris is removed from the highway right-of-way and properly disposed.)
- State missions shall be assigned on a prioritized basis, according to the following order of priorities:
 - First: to re-open transportation corridors in order to enable the passage of emergency vehicles.
 - Second: to re-open transportation corridors and other property to allow utility crews access to facilitate repairs of the utility infrastructure and restore power.
- MEMA will activate the State CEMP and notify Emergency Support Function (ESF) personnel to report to the State Emergency Operations Center (SEOC) when a potential or actual emergency situation may result in local municipal requests for State assistance.
- Local jurisdictions will submit all requests for assistance to MEMA.
- MEMA will review all requests from local jurisdictions to ensure that the requests are consistent with the priorities of this Policy and that all local resources are deployed for emergency activities.
- When requested by MEMA, State agencies will conduct damage assessments at impacted sites in order to determine the appropriate equipment and other resources needed to perform the required work and/or provide personnel to serve on the ESFs.
- When local governments do not have the appropriate and necessary resources available to perform the required work, MEMA will determine if State resources are available in another location.

- When appropriate and necessary State resources are not available (already totally committed and/or not available in agencies' inventory), MEMA will assist local municipalities to identify potential contractors.
- Early in the response, MEMA will assist local municipalities to identify potential contractors and/or provide contracting assistance, guidance, and/or expertise to facilitate the transition of response and recovery activities from State agency assistance back to local municipality responsibility.
- The intent of State agency assistance is to re-open roads, rather than to restore the local transportation system to pre-event conditions. In some situations, State agencies will move debris to the side of the road(s) and the local jurisdiction which owns the road will be expected to transport debris from the side of the road to approved recycling, composting, or disposal sites for final disposition.
- Within one week after the issuance of the State Emergency Declaration, state and local authorities, i.e. MEMA, the Debris Management Coordinator and the affected community, will determine whether establishment of a completion date for the collection of debris placed in public rights-of-way (ROW) by private property owners and others is appropriate. This assessment will be conducted at least weekly thereafter. Once MEMA decides to implement a completion date, the date will be publicized to all of the affected jurisdictions. The purpose of the deadline is to maintain emphasis on the emergency nature of the work and to insure that disaster-related activities are completed in a timely manner. This will also serve to avoid problems that can occur when non-disaster work is performed simultaneously with emergency projects. In addition, this will allow residents and local jurisdictions to complete disaster clean up and will free governmental workers to proceed with other essential services.
- The condition of all roads will be regularly assessed/monitored to determine priority for possible deployment of available State resources. Roads will be assessed according to the following rating system:

1 = impassable

2 = passable, but right-of-way not usable (shoulder damaged, large debris piles, etc.)

3 = normal/ "clean" (pre-disaster condition)

Unless directed otherwise by MEMA, State resources will be re-deployed/re-assigned or withdrawn from the area when a road segment has a rating of 2 or higher.

1.6 Local Government Expectations

Local government is the lead decision maker and responder in times of emergency and, therefore, must realize that:

- Emergency work will incur overtime costs.
- Emergency work demands a 100 percent local commitment.

- Local government is required to be the lead agency in acquiring contractor assistance. When possible, qualified contractors should be pre-identified and approved.
- Local government(s) will submit request(s) for assistance to the State Emergency Operations Center (SEOC).
- The SEOC will evaluate all local governmental requests and will attempt to identify and/or arrange for assistance from other local governments and/or contractors to ensure the efficient utilization of all available local resources. In these cases, local government is still required to cover these costs.
- After determining that all local resources are totally committed to the emergency situation, the SEOC will process the request(s) for State assistance to ensure efficient utilization of all available State resources, whether state agency staff and equipment or state contractors.
- The State will provide a representative or liaison to the local government.

1.7 Public Assistance Grant Program

Under the Public Assistance (PA) Program, which is authorized by the Stafford Act, FEMA awards grants to assist State and local governments and certain Private Nonprofit (PNP) entities with the response to and recovery from disasters. Specifically, the program provides assistance for debris removal, emergency protective measures, and permanent restoration of infrastructure. The Federal share of these expenses typically cannot be less than 75 percent of eligible costs of debris removal, emergency services related to the disaster, and repairing, replacing or restoring damaged public facilities and infrastructure. The program also encourages protection from future damage by providing assistance for hazard mitigation measures during the recovery process. The PA Program encourages planning for disaster recovery, but PA Program funds may not be used for the costs of planning. The costs incurred implementing the plans are eligible for reimbursement only if they meet PA Program eligibility criteria.

To minimize costs and ensure maximum reimbursement under the PA Program, local governments should have a debris management plan prior to a disaster event. MassDEP has developed guidance to support development of local disaster debris management plans, and assist governments in performing the planning steps. This guidance is available via the MassDEP web site at <http://www.mass.gov/dep/recycle/laws/policies.htm#sw>.

In general, debris on private property is the responsibility of the individual property owner aided by insurance settlements and assistance from volunteer agencies. FEMA assistance is not available to reimburse private property owners for the cost of removing debris from their property; however, state or local government collection and management of disaster-related debris placed at the curb by residents typically is considered an eligible cost. And, debris on public property that must be removed to allow continued safe operation of governmental functions or to alleviate an immediate threat is considered an eligible cost. This work must be carefully controlled with regard to extent and duration. Generally, costs that can be directly tied to the performance of eligible work are eligible for FEMA reimbursement. Such costs must be:

- Reasonable and necessary to accomplish the work;
- Compliant with Federal, State and local requirements for procurement; and
- Reduced by all applicable credits, such as insurance proceeds and salvage values.

Local governments should refer to FEMA guidance for more specifics on what costs are eligible for reimbursement. Web links to important FEMA documents are provided in Appendix A.

2.0 EMERGENCY ORGANIZATIONS AND RESPONSIBILITIES

This section describes the responsibilities of key organizations at the State, Municipal, and Federal levels of government.

2.1 State

2.1.1 Massachusetts Emergency Management Agency (MEMA)

MEMA is responsible for coordinating emergency response during major disasters including the management and direction of State resources. State Agencies are organized in the Massachusetts Comprehensive Emergency Management Plan (CEMP) into Emergency Support Function (MAESF) groups. The MEMA Director would utilize the CEMP resources and structure in responding to a disaster in the Commonwealth. MEMA will activate the State CEMP and notify MAESF personnel to report to the State Emergency Operations Center (SEOC). The Governor may declare a State of Emergency if conditions merit State resources to protect lives and public safety.

2.1.2 Department of Conservation and Recreation (DCR)

DCR operates and maintains a regional park, roadway, and recreational system in the Boston metropolitan area and watershed areas at Quabbin and Wachusett Reservoirs and manages the state forests. DCR will coordinate with Public Works and Engineering (MAESF-3) agencies in committing resources, as needed, in support of public works and engineering response efforts, including utilizing its equipment and personnel resources to assist in removing debris from the public right-of-way and in maintaining emergency communications, as needed.

2.1.3 Massachusetts Bay Transportation Authority (MBTA)

MBTA will coordinate the emergency use, and if required, the repair and restoration of its buses, trolleys, trackless trolleys, and rapid transit in the 78 cities and towns of the MBTA district

2.1.4 Massachusetts Highway Department (MHD)

MHD has responsibility for the building and maintenance of state highways and bridges and, as such, will coordinate with MAESF-3 to support emergency response efforts related to public works and engineering.

2.1.5 Massachusetts Port Authority (MPA)

MPA is responsible for the operation and maintenance of commercial aviation facilities at Logan International Airport, Hanscom Field, the maritime facilities in the Port of Boston, and for the Tobin Bridge. The MPA will support MAESF-3 as needed.

2.1.6 Division of Capital Asset Management (DCAM)

DCAM is responsible for planning, design, property management, facilities maintenance, and supervision, acquisition, renovation and demolition of public buildings of the state. The Division will provide construction expertise in support of MAESF-3.

2.1.7 Department of Environmental Protection (MassDEP)

DEP regulates hazardous and solid waste management, drinking water and wastewater systems, and hazardous waste site cleanup in the Commonwealth. MassDEP will coordinate with other MAESF-3 agencies, as needed, in committing resources in support of public works and engineering response efforts. MassDEP also will provide guidance to support development of local disaster debris management plans prior to a disaster event.

2.1.8 Massachusetts Water Resources Authority (MWRA)

MWRA operates the sewer and water delivery systems for the Boston metropolitan area, and has the authority to rebuild sewage treatment facilities and water supply pipelines. The MWRA will coordinate with MAESF-3 in the repair and restoration of impacted water and wastewater treatment systems.

2.1.9 Massachusetts Department of Agriculture (DAR)

DAR has responsibility for the protection of animal victims (domestic animals, fish and wildlife) and disposal of dead animals. DAR will coordinate with MAESF-3 to support emergency response efforts related to disposal of animal carcasses.

2.1.10 Massachusetts Department of Fish and Game/Division of Fisheries and Wildlife (DFG)

DFG has responsibility for the protection of animal victims (, fish and wildlife) and disposal of dead animals. DFG will coordinate with MAESF-3 to support emergency response efforts related to disposal of animal carcasses.

2.1.11 Massachusetts Department of Public Health (DPH)

DPH provides for protection of public health. The DPH will coordinate with MAESF-3 to support emergency response efforts related to disposal of animal carcasses and infectious wastes.

2.2 Municipalities

Local government is responsible for emergency response within their jurisdiction and is strongly encouraged to develop disaster debris management plans for their communities as an annex to their local CEMP. During a disaster or emergency, local governments may activate their local Emergency Operations Center (EOC). The EOC functions as a designated focal point of communication activity within the town. The EOC will be staffed per the CEM Plan's Incident Command System. Disaster debris management is a function of the local disaster response. Response efforts will first be directed to protect lives and property such as evacuation, sheltering, fire fighting, search and rescue, utility restoration, and clearing debris from key roads. Local government also will be responsible for later stages of debris management, including collecting debris and establishing debris management sites. Municipal personnel, equipment and resources would be augmented by contractors, volunteers and mutual aid from neighboring communities. A local State of Emergency may be declared when resources are inadequate to cope with an emergency. Local resources need to be fully utilized before state resources will be brought into play. MEMA may provide support if requested under such circumstances.

2.2.1 Mutual Aid Agreements

Local governments are strongly encouraged to enter into mutual aid agreements to provide assistance to one another during an emergency or a natural disaster. The agreements should either stipulate reciprocal services or set labor and equipment rates. In order for emergency assistance provided under a mutual aid agreement to be eligible for reimbursement by FEMA, the agreement must be in writing and must be in place before the disaster. Additional requirements for FEMA assistance include:

- Assistance should be directly related to the disaster and meet other FEMA eligibility requirements;
- Mutual Aid Agreement should not be contingent upon federal funding or declaration of disaster by the federal government;
- The eligible applicant receiving aid must request the grant from FEMA. The entity providing aid may not apply for a grant directly.
- The applicant must be able to provide documentation that aid was requested, that aid was received and costs incurred by the entity providing aid.

Sample mutual aid agreements are included in Appendices C and D. FEMA guidance on Mutual Aid Agreements may be found at: http://www.fema.gov/government/grant/pa/9523_6.shtm

2.3 Federal Government

The Federal Response Plan outlines the process under which Federal support may be provided. MEMA is the State contact for Federal emergency assistance. The Governor may request a Presidential Disaster Declaration when local and State response and recovery efforts are unable to adequately cope with the situation. MEMA assembles the data for such a request working through the MEMA Area offices and their respective communities.

If an emergency or major disaster declaration is made under the authority of the Disaster Relief Act (Public Law 93-288) as amended by the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 101-7-7), assistance is usually provided in the form of financial reimbursement of a portion of the disaster-related costs for approved projects. Debris removal costs incurred by municipalities and the State would be evaluated and if determined eligible would be reimbursed on a cost-sharing basis (normally 75% federal and 25% split evenly by local and State).

FEMA may provide support to State and local governments during and after emergency events. In catastrophic disasters, FEMA can also provide direct Federal assistance to support municipalities and the Commonwealth in performing some debris removal activities. The response capability must clearly exceed the resources of local and State efforts. FEMA may also direct other Federal agencies to provide debris removal technical assistance to municipalities and the State. Technical assistance may be provided in contract preparation, bid solicitation, contract management, and debris disposal

activities. Municipalities and the State remain responsible for all debris removal activities and are reimbursed for their eligible costs.

Although not every disaster may qualify for declaration as a Federal emergency or major disaster, all disasters in which debris is a significant component should be conducted as though Federal assistance will be provided. By doing so, the State agencies and local governmental entities will help ensure compliance with FEMA requirements and regulations, minimize delays in obtaining funding, maximize eligible funding, and reduce the potential for problems both during and after disaster operations. Complying with those requirements during non-Federal disasters, as well as training scenarios, will help ensure compliance during a declared event. Particular attention should be focused on these areas of FEMA eligibility: reasonable costs, contracting procedures, contract monitoring, and documentation. Planning requirements for each of these areas are detailed in FEMA Publication 325 Debris Management Guide (DMG325), which is available at: www.fema.gov/pdf/government/grant/pa/demgde.pdf.

3.0 SITUATION AND ASSUMPTIONS

Initial emergency response emphasizes the importance of life saving operations and the clearing of access ways for emergency personnel and equipment by pushing debris to the edge of rights-of-way. The Debris Plan's primary focus is on the clean up that follows.

Massachusetts has experienced various natural and technological disasters through out the years that have generated quantities of debris that have exceeded local capability resulting in requests to MEMA for assistance. The Debris Plan assumes a major disaster would overload the Commonwealth's waste management capacity and that the potentially massive volumes of debris and/or infectious or hazardous debris would require special debris management strategies. As an all hazards plan, this plan recognizes that a wide variety of disaster events could generate very different combinations of different categories of debris and diverse challenges in managing that debris. This plan provides an overall framework for addressing debris management and provides specific management recommendations for specific types of debris. The plan recognizes that regular waste management approaches may be inadequate following a disaster that generates large amounts of debris and that different approaches may be required in some cases. This section describes the potential types of disasters that could generate large amounts of debris, and the types of debris that would typically be generated by each. The section continues with recommended general debris management approaches across all types of debris, followed by recommendations for managing each specific category of debris.

3.1 Storms and Earthquakes

The quantity and type of debris generated varies widely depending on the kind of disaster event, its location, as well as the event's magnitude, duration, and intensity.

3.1.0 Hurricanes

The damaging forces of hurricanes and tropical storms include high velocity winds (up to 150 miles per hour or higher in gusts), storm surge, and wave action. The most severe damage frequently occurs along the coast. Hurricane debris consists primarily of vegetation, sediments, trees, personal property and building materials. The effects of a hurricane often extend far inland, with significant tree and structural damage. Hurricanes are rated from categories 1 through 5. Tornadoes may be spawned from hurricanes causing severe localized damage.

3.1.1 Tornadoes

Damage from tornadoes is caused by high velocity rotating winds. Like hurricanes, tornadoes are rated on a numerical scale based on the severity and other characteristics. The amount of damage depends on the size, velocity of winds, and duration of funnel contact with the earth. Contact paths may range from a mile or less in width and from 100 yards to several miles in length. Tornadoes may skip across a wide area with several touchdowns. Damage consists of trees, structures, and personal property.

3.1.2 Floods

Flooding causes damage to property due to inundation and erosion. Flooding is often confined to discernible floodplain areas, but may also occur as a result of a dam failure or flash flood in areas

downstream of higher elevation streams, ponds and rivers. Debris consists of sediments deposited on public and private property, and water damaged materials. Soil, gravel, rock and construction materials may also be eroded by floodwaters.

3.1.3 Earthquakes

Earthquakes cause damage by shock waves and earth movement along fault lines and over some distance from the center of the quake. Secondary damage from fires can be substantial. Debris consists of building materials, personal property, and a host of utility and transportation infrastructures.

3.1.4 Ice/Winter Storms

Ice and winter storms cause damage to trees, utility lines/infrastructure, and wide span roofs. Coastal storms may flood developed areas, and erode near shore areas. Debris consists of trees, utility lines, wires, poles/towers, and building debris from damaged roofs and structures. Disposal of possibly contaminated snow and ice from roadways is also a consideration.

3.2 Infectious Diseases

Infectious diseases may be either animal diseases or human pandemic diseases, each of which results in different infectious and/or medical wastes that require specific management approaches.

3.2.1 Avian Flu

MassDEP is working with the Department of Agricultural Resources, the Department of Public Health, the Division of Fisheries and Wildlife and other state and federal agencies to develop a specific debris management plan for managing avian flu infected carcasses and other associated debris. This plan is included as a sub-component of this broader all-hazards plan.

3.2.2 Other Animal Diseases

Infectious animal diseases pose unique debris management challenges, with the key issue being the need to reduce the potential for disease transmission while safely managing diseased carcasses and associated materials. Disposal of animal carcasses may also be an issue in other disasters, especially floods.

3.2.3 Human Pandemic Diseases

A human pandemic disease also would create challenging debris management problems, particularly in terms of managing medical waste and other infectious debris. In such an event, it would be critical to manage infectious wastes separately from regular trash to limit the amount of material that needs to be managed as infectious waste.

3.3 Terrorist Attacks or Facility-Based Disasters

3.3.1 Terrorist Attacks

The nature and amount of debris from a terrorist attack could vary widely depending on the nature of the attack and the target. A terrorism event is by law a crime and the site is considered a crime scene. Debris operations may come under the direction of Federal law enforcement officials who may have little knowledge or experience in debris management, but rather are focused on

investigating the scene and gathering evidence. This will likely result in delays in clearing and managing debris.

3.3.2. Facility-Based Disasters

This could include large fires or chemical spills. Release of hazardous chemicals, either through air releases or release to land or water, could pose health risks to nearby areas. Such a disaster could occur at a fixed facility or while chemicals are being transported along railways or roadways.

3.4 Massachusetts Solid Waste Policy Framework

The Debris Plan provides a framework for organizing rapid, safe, and cost effective debris management while minimizing debris-related threats to public health and safety, as well as potential adverse environmental impacts. While complying with these criteria, the Debris Plan also functions within the framework of the Commonwealth's Solid Waste Master Plan and the objectives of the federal Resource Conservation and Recovery Act (RCRA). The Debris Plan therefore focuses on maximizing waste reduction, recycling, and composting, use of select materials as fuels, and other diversion to limit the amount of debris that needs to be sent to disposal facilities.

MassDEP's *Beyond 2000 Solid Waste Master Plan* and [2006 Revision](#) maintain the Commonwealth's preference for source reduction, recycling, and composting over disposal and establish policies and strategies to achieve a 70 percent waste reduction rate by 2010. Reducing waste disposal reduces waste management costs, while conserving resources, saving energy, supporting jobs and economic development in Massachusetts, and reducing pressure on limited in-state disposal capacity. Therefore, recycling and composting capacity is considered a core part of Massachusetts waste management infrastructure and capacity. Massachusetts also recognizes that some waste still needs to be disposed of and oversees landfills, combustion facilities, and transfer stations to ensure that waste sent for disposal is managed safely.

The general objectives of RCRA are similar to Massachusetts' goals: to promote and improve techniques for resource recovery and conservation, and to promote environmentally sound disposal for non-recoverable materials. The necessity to meet these objectives has become more acute as disposal costs escalate, the availability of landfill capacity decreases, and the need to conserve valuable resources has become more important.

The Commonwealth supports the objectives of RCRA, and recognizes that during natural or technological disasters, terrorism events, or any other occurrence that results in significant amounts of debris, it will be necessary to expand existing procedures to separate, reduce, and recycle as much of the debris as possible. This practice will continue the Commonwealth's commitment to reuse, recycling, composting, use of select materials as fuels, and other diversion to preserve valuable limited disposal capacity for future use.

3.5 Debris Separation and Debris Types

One key to effective disaster debris management is to separate categories of debris to the maximum extent possible prior to collection. Quick and effective debris separation prior to collection limits

the amount of contamination of specific debris types, enabling each category of debris to be managed in the most effective way possible. For example, keeping vegetative debris separate from other types of debris enables it to be chipped for mulch, chipped for use as a fuel for power plants, or made into compost that can be reused. For disasters such as storms that affect large numbers of households and small businesses, debris separation is best achieved at the point of collecting debris at the curb or as close to the source as possible, rather than trying to separate mixed materials after they have been delivered to collection areas. Once different types of debris become mixed together, it is very difficult to separate them into clean, uncontaminated sub-components. Mixed debris cannot be managed easily except by disposal, and disposal capacity in Massachusetts and throughout the Northeast United States is limited. More specific recommendations on collection and outreach strategies for debris separation are covered in Section 7. Maximizing separation of debris types:

- Is the most environmentally preferable approach and consistent with the Massachusetts Solid Waste Master Plan
- Limits the amount of material that needs to be disposed of, reducing demand on limited disposal capacity and taking advantage of other capacity for managing debris
- Enables opportunities for more cost-effective diversion of some debris types. Separating debris that has been mixed is extremely difficult and expensive.
- Helps to ensure that hazardous products or infectious wastes in particular do not contaminate other debris streams

MassDEP recognizes that debris separation may not always be possible when different types of debris are mixed together. However, the more that debris can be separated and enable diversion from limited disposal capacity, this limited capacity can be used for waste that needs to be managed at a landfill or combustion facility, and the capacity can remain available for ongoing waste disposal needs.

3.5.1 Estimating Debris Quantities

Because this plan covers a wide range of potential disaster events that may generate widely different amount and types of debris, the plan does not cover estimating debris quantities for all types of scenarios. However, it is possible to estimate the “worst case” for a major storm event and the amount of space needed to management that debris, given the size of a municipality and relative density of buildings and vegetation. The estimate of the amount of space needed to manage the debris is used to determine the number of Debris Management Sites (DMS) that are needed. The actual number of sites can vary with the size of each DMS, distance from source, the speed of reduction and the removal urgency.

To forecast a rough estimate of the overall amount of debris that might be expected from a hurricane or similar major storm event, either actual data from a previous disaster event in the state or nearby states is used, the generic modeling developed by the United States Army Corps of Engineers (USACE), or a combination of both. The Army Corps model can be found at <http://209.225.176.11/ceerp/>. The factors that go into the USACE hurricane debris-estimating model are:

- Households in your jurisdiction
- Storm category factor (1-5)
- Vegetative cover (light, medium, or heavy)
- Commercial density (light, medium, or heavy)
- Precipitation factor (none/light or medium/heavy)

Example: For a municipality with 10,000 households and medium vegetative and commercial density, a worst-case debris estimate based on this model would be:

$$10,000 \text{ households} \times 26 \text{ cubic yards cat 3 storm factor} \times 1.3 \text{ veg. cover} \times 1.2 \text{ comm. Density} \times 1.3 \text{ precip. factor} = 527,280 \text{ cubic yards}$$

The factors that go into the USACE model for estimating the amount of space needed for managing that debris includes:

- Quantity of debris in cubic yards
- Volume of debris per acre (16117 cubic yards per acre)
- Factor for area needed for roads and buffers (1.66)

Example: For a municipality with 527,280 cubic yards of debris, the debris management space estimate based on this model would be:

$$527,280 \text{ cubic yards amount of debris} / 16117 \text{ cubic yards/acre volume of debris per acre} \times 1.66 \text{ factor for roads and buffer} = 54.31 \text{ acres}$$

Using the USACE model at <http://209.225.176.11/ceerp/>, the estimated amount of debris that might be generated and space needed to management that debris for a worst-case (category 3 hurricane) for each county in Massachusetts is presented in Table 1.0 Debris Estimates for the Counties in Massachusetts

Table 1.0 Debris Estimates for the Counties in Massachusetts

County	Population	Housing units	Corps of Engineers Debris Model	
			Debris Estimate (cy)	DMS Acres
Barnstable County Total	222,230	147,083	7,755,392	789
Berkshire County Total	134,953	66,301	3,495,919	360
Bristol County Total	534,678	216,918	11,437,652	1,177
Dukes County Total	14,987	14,836	782,273	80
Essex County Total	723,419	287,144	15,140,529	1,558
Franklin County Total	71,535	31,939	1,684,080	173
Hampden County Total	456,228	185,876	9,800,870	1,008
Hampshire County Total	152,251	58,644	3,092,181	318
Middlesex County Total	1,465,396	576,681	30,407,236	3,129

Nantucket County Total	9,520	9,210	485,625	50
Norfolk County Total	650,308	255,154	13,453,760	1,384
Plymouth County Total	472,822	181,524	9,571,397	985
Suffolk County Total	689,807	292,520	15,423,995	1,587
Worcester County Total	750,963	298,159	15,721,328	1,618
Total – Massachusetts	6,349,097	2,621,989	38,252,237	14,225

population and housing unit data Source: U.S. Census Bureau, Census 2000 Summary File 1
debris calculations based on Corps of Engineers Debris Model

Using the USACE model, the estimated amount of debris generation by municipality is presented in Appendix B. The estimates produced by the USACE model are predicated to have an accuracy of \pm 30% (accuracy is limited due to the many variables inherent to the debris removal process). There are additional wastes that are not estimated by this model (i.e. hazardous household waste, white goods, electronic equipment, vehicles, boats, and animal carcasses) that have special management requirements. Therefore, some additional acreage may be needed to that predicted by the USACE model.

Even a rough estimate of debris generation will enable municipalities to understand what local resources will be needed to manage disaster debris as well as at what point local resources would likely be overwhelmed and state and/or federal assistance required. In addition to having an estimate of the overall amount of debris that may need to be managed, it also is important to anticipate what types of debris may be generated and what management solutions may be needed for these types of debris. Typical categories of debris are discussed below.

3.5.2 Characterization of Major Types of Debris

Most debris generated from disasters falls into one of the following categories:

- Vegetative Debris – Trees, stumps, limbs, brush, and leaves – generated from all types of storms and floods
- Building Debris – Metal, wood, brick and concrete, roofing materials, wallboard, piping, wiring, and other construction materials, some materials may have asbestos – generated from all types of storms, floods, earthquakes, and terrorist attacks
- Other Construction Debris – Road and bridge debris such as asphalt and concrete, telephone poles
- Bulky Waste – Furniture, carpets, mattresses – typically generated in large amounts from major storms and floods
- Appliances and Electronics – Refrigerators, stoves, other appliances, and computers, televisions, and electronics – typically generated from major storms, floods, and earthquakes
- Vehicles – Cars, trucks, boats, other vehicles – can be damaged or moved by major storms or flooding, may be on roadways or in other less accessible locations
- Household Trash – Household trash – household items, spoiled food, packaging – generated in elevated amounts from major storms or floods

- Hazardous Household Products – Oil, pesticides, paints, pool chemicals, other hazardous products used and stored in homes – generated in increased volumes following major storms and floods
- Commercial Hazardous Waste – Hazardous or toxic chemicals used in large amounts by industrial or commercial businesses – generated from facility-specific fires or spills or from major storms, floods, or earthquakes
- Soils and Sediments – High bacterial or toxicity levels may contaminate soils and sediments – generated from floods or major storms that result in flooding or storm surges
- Infectious/Medical Waste – Animal carcasses and associated materials due to a animal disease outbreak or trauma, medical wastes in pandemic event, materials contaminated by sewer backups due to heavy flooding

3.6 Management Recommendations for Major Types of Debris

- Vegetative Debris – In many disasters, this constitutes the largest volume of debris. Fortunately, it can be readily chipped for use as wood chips, mulch, or boiler fuel. Smaller vegetative debris can be sent for composting at a compost site in the Commonwealth. This material should be separated for chipping or composting to the maximum extent possible, rather than being sent for disposal. A list of compost sites in Massachusetts, many of which have equipment to chip or grind tree branches, is available on the MassDEP web site at <http://www.mass.gov/dep/recycle/solid/swfacil.htm>. In addition, many companies provide on-site tree chipping services. These can be best found by checking local yellow pages directories. As the number of biomass to electrical energy facilities increase in New England, there will be an increased demand for wood chips for fuel. In some cases, fallen trees may be able to be collected by [tree harvesters](#) or [lumber mill operators](#) for use as lumber.
- Building Debris – Building debris from a disaster can include a wide variety of materials, some of which can be separated for recycling and some of which may need to be sent for disposal. To the extent building debris can be source-separated from other debris types, the best solution is to send it to a construction and demolition debris processing facility. As of the time this plan was written, there are 15 permitted C&D processing facilities in Massachusetts. A list of transfer stations and handling facilities, which includes C&D processing facilities for mixed C&D debris, can be found on the MassDEP web site at <http://www.mass.gov/dep/recycle/solid/swfacil.htm>. Some building materials such as asphalt, brick, and concrete or roadway materials may be reused at building sites or in road construction, rather than being transported to a processing facility. These materials may be crushed and used for a number of uses, including aggregate sub-base and base material, base of building foundations, fill for utility trenches, and as fill/grading material in large construction projects.

A critical factor in effectively managing large amounts of mixed building debris is determining what materials need to be managed and disposed of as Regulated Asbestos Containing Materials. Because most debris does not contain asbestos, many asbestos containing materials can often be readily identified, and disposal options for asbestos

containing materials are very limited, Massachusetts' goal is to clearly identify debris that does not contain asbestos and that can be safely managed by a C&D processing facility and diverted from disposal. However, to avoid exposure to asbestos fibers, it is critical that materials that are known to contain asbestos are managed separately from other building debris as regulated asbestos containing material.

- Bulky Waste – Bulky waste, which includes items such as furniture, mattresses, and rugs, will be damaged following a disaster and will typically need to be collected and separated for disposal, either at an in-state disposal facility or sent to a transfer station to be sent for disposal at an out-of-state disposal facility. Please see section 2.7 for more information on disposal capacity, facilities, and haulers. Information on in-state disposal facilities and transfer stations can be found at <http://www.mass.gov/dep/recycle/solid/swfacil.htm>.
- Appliances and Electronics – Many damaged appliances and electronics may be generated during a disaster and many can and should be separated for recycling and have refrigerants (i.e., Freon) removed and captured. This includes “white goods”, appliances such as refrigerators, dishwashers, stoves, etc., and computers and electronics. Information on companies that recycle these items can be found in a searchable form by zip code at www.cleanup.org or in a more broader list at www.wastecap.org - click on the link for the Recycling Services Directory.
- Vehicles and Vessels – Major storms such as hurricanes, tornados, or floods have the potential to move cars, trucks, boats and other vehicles long distances, creating another debris stream that needs to be managed. Assuming these vehicles are not operable, removing them requires towing equipment or, if located in off-road areas, other equipment such as cranes. Similar issues may exist for boats that are damaged and deposited on land by a storm surge.

In general, abandoned cars in Massachusetts are dealt with by the local government, typically by Municipal Police Departments. A car that is parked on public land, or a public roadway for longer than 72 consecutive hours is considered to be abandoned per Massachusetts General law Chapter 90, Section 22(b) and Chapter 212 of the Acts of 1988. However, if residents have been forced to leave their homes following a disaster event, vehicles should be held for a longer period to enable them to be claimed.

The Massachusetts Environmental Police is the state agency responsible for addressing abandoned or wrecked boats in water, on shore, or in tidal waters. Various Massachusetts General Laws dictate proper protocol to be followed by the Environmental Police in the event that a boat has been abandoned or wrecked. Relevant statutes include MGL Chapter 91, Sections 38- 41.

If a person is found to be the owner of a vessel causing obstruction, the Environmental Police will give them written notice to remove the vessel within a time ‘therein’ specified, which will be deemed sufficient notice. If a vessel that is not abandoned is not removed within the time specified, the Environmental Police may remove this vessel and the costs, when not

covered by the owner, shall be paid by the commonwealth as certified by the Environmental Police and approved by the Governor.

Vehicles and vessels brought to temporary storage areas should be inventoried by license plate, make, model, color and VIN, with a list available on site to enable residents to retrieve their vehicles. Vehicles should be stored in an area that will not interfere with other management site operations and incoming and outgoing trucks. They should be tagged for easy retrieval.

- Household Trash – Normal trash and recycling service may be disrupted for some time after disasters for multiple reasons, including areas being inaccessible due to debris, flooding damage to collection fleets, and/or personnel absences. At the same time, some disasters will result in peak volumes of trash due to the need to clear out damaged household items, spoiled food, etc. Normal trash service should be resumed as soon as possible. In cases where it is difficult to resume normal trash and recycling collection, communities may need to contract for collection services on an emergency basis. MassDEP may, upon request from a facility, temporarily waive waste bans for certain recyclable waste ban materials that are not recyclable due to contamination (see section 3.7 below). However, MassDEP would be reluctant to waive waste ban requirements, as they help support the goal of maximizing diversion of materials that can be diverted from disposal.
- Hazardous Household Products (HHP) – This Plan focuses on the large volume of non-hazardous waste generated by a major disaster. Although MAESF-10 Hazardous Materials addresses hazardous waste response related to industrial hazardous waste, it does not specifically address the relatively small amounts of hazardous waste that are generated by households following a disaster – known as hazardous household products. These wastes may include household chemicals, solvents, paints, pesticides, propane tanks, and petroleum products that can be hazardous to human health and the environment if not handled properly.

Hazardous Household Products (HHP) should be separated at the source and managed separately to avoid contaminating the non-hazardous debris. HHP collection should be carried out by special collection dedicated specifically to HHP. Many municipalities have existing contracts with companies qualified to collect and safely dispose of hazardous household products. Local Public Works facilities or municipal transfer stations or recycling centers may be able to serve as temporary storage sites for hazardous products collected from residents until the HHP can be collected by a hazardous waste company.

Under MassDEP's regulations (CMR 30.392), collection events may last up to 48 hours, with an additional 24 hours allowed to pack and transport materials off site. However, under 310 CMR 30.1100, MassDEP may waive this requirement in certain cases when it does not pose an environmental or public health risk. In a declared State Emergency, MassDEP would consider issuing a waiver to allow a collection event(s) to continue beyond the 48-hour limit to collect HHP following a disaster. These collection events could also address other difficult to manage wastes such as ammunition. Where possible, materials such as propane tanks, car batteries, paint, and used motor oil with separate recycling outlets, and that do not

have to be collected and managed as hazardous waste, should be collected separately from household hazardous waste collections to reduce costs.

MassDEP encourages residents to take advantage of local hazardous product collection programs to clear out hazardous products on a routine basis and reduce use of hazardous products, thereby limiting the amount of hazardous products that need to be dealt with in the wake of a disaster. Massachusetts has an existing Master Service Agreement for hazardous products collection and management that can be used by any state agency or political subdivision to collect and/or dispose of hazardous products. This contract includes three categories:

- Category 1: Hazardous Material Collection and Disposal
- Category 2: Hazardous Material Collection Events
- Category 3: Medical Waste Collection and Disposal

This contract, # FAC36, can be accessed via the state purchasing system Comm-Pass at www.comm-pass.com, selecting the option to search for contracts, and typing “FAC36” as the Document Number to search for.

- Commercial Hazardous Waste – The Debris Plan focuses on the large volume of non-hazardous waste generated by a major disaster. MAESF-10 Hazardous Materials addresses hazardous waste response related to industrial hazardous waste or oil spills, which would typically be managed under MassDEP’s Emergency Response and Site Cleanup Program.
- Soils and Sediments – Flooding or heavy winds can result in large amounts of soils and sediments being deposited on transportation corridors or on private property. In some cases, these sediments may have high levels of bacterial contamination or toxic chemicals and may need to be removed and disposed of. These concerns would be addressed under the 21E Waste Site Cleanup program.
- Infectious/Medical Waste – In cases of animal disease outbreaks or human pandemic disease, large amounts of infectious and medical waste may be generated. This could also be the case in other disaster events that have high casualty levels. This waste needs to be separated from other trash, to reduce the amount of waste that needs to be managed as infectious waste. Managing infectious waste is costly and there are a limited number of companies that can provide this service.
- Animal Carcasses - Major storms such as hurricanes, tornados, or floods have the potential to negatively impact both domestic animals and wildlife. Recommendations for disposing of large amounts of animal carcasses are presented in Appendix J.

3.7 Debris Disposal and Transfer Capacity

Massachusetts recently completed the *Solid Waste Master Plan: 2006 Revision*. This document, which presents the Commonwealth’s policy framework and strategies for managing solid waste and

includes statewide solid waste and waste reduction data and waste management capacity projections, can be found on the MassDEP web site at <http://www.mass.gov/dep/recycle/priorities/dswmpu01.htm#swmp>.

In 2005, Massachusetts generated 14.1 million tons of waste, of which 12.8 million tons was managed in state through diversion (7.6 million tons) or in-state disposal (5.2 million tons), while 1.4 million tons was exported for disposal (on a net basis), about 10 percent of total waste generation and about 25 percent of total annual disposal. In 2005, approximately 2.0 million tons were disposed of at in-state landfills and 3.1 million tons were disposed of at combustion facilities.

Combustion facility disposal capacity is expected to remain relatively level; however, landfill capacity in Massachusetts is projected to decrease from 2.5 million tons in 2005 to 1.2 million tons in 2013. As a result, depending on recycling progress, disposal capacity projections show projected net export of between 1.2 million and 2.4 million tons by 2010 and between 2.5 million and 4.0 million tons by 2013.

Massachusetts does have a large amount of transfer station capacity, with nearly 200 transfer stations, including several that can transport waste long distances via rail lines. In the event of a disaster that generates large amounts of debris that would overwhelm in-state disposal capacity, those transfer stations with rail access would be expected to handle a large portion of debris that needs to be sent for disposal. Massachusetts transfer stations annually accept more than 3 million tons of material and could accept considerably more on an emergency basis. For lists of transfer stations and handling facilities, landfills, and combustion facilities see the Mass DEP web site at <http://www.mass.gov/dep/recycle/solid/swfacil.htm>. The *Solid Waste Master Plan* recognizes that export of waste via transfer stations is a core part of the state's ongoing waste management infrastructure and capacity, as are recycling and composting facilities. This data will be updated on an annual basis, typically 18 months following the end of each calendar year (i.e., 2006 data will be published in June 2008.)

Massachusetts has [waste bans](#) in place prohibiting certain hazardous, recyclable and compostable materials from disposal in Massachusetts. MassDEP does have the ability to temporarily waive waste ban requirements in cases when these materials are not recyclable, and could potentially take this step to expedite debris removal following a disaster. However, given that the need to divert materials from disposal becomes even greater following a disaster when disposal capacity may be overwhelmed, MassDEP may choose to maintain waste ban requirements to encourage high levels of diversion of recyclable and compostable materials.

Given this framework, Massachusetts will approach disaster debris management and capacity needs as follows:

- Divert as much material from disposal as possible through recycling, composting and other diversion options. This will limit increased use of valuable limited disposal capacity, preserving it for future use, while ensuring that materials are managed in the most environmentally preferable way. MassDEP anticipates that large amounts of the following materials would be diverted from disposal:

- vegetative waste (chipped for mulch or fuel for biomass power plants, composted, or, as a last resort, burned by an air curtain burner)
- building materials (asphalt, brick, and concrete crushed on-site or brought to crushing operation; other C&D brought to C&D processor, unless contaminated by asbestos)
- appliances and electronics (delivered to recycling companies)
- vehicles (delivered to metal recyclers)
- hazardous household products (collected separately and delivered for hazardous waste management)
- Use Massachusetts in-state disposal capacity for disposal of disaster debris, including allowing temporary tonnage increases on an emergency basis. MassDEP regional offices have the authority to temporarily increase permitted tonnage limits in emergency situations. However, given the limited number and size of facilities available in Massachusetts and the importance of preserving this capacity for the future, MassDEP does not anticipate that in-state disposal facilities could or should handle the full volume of debris generated by a major, widespread disaster.
- As a result, MassDEP plans to rely on the approximately 200 transfer stations to transfer waste that cannot be diverted to facilities outside of Massachusetts for disposal. Because other Northeast states also have limited disposal capacity and could also be impacted by the same disaster events that affect Massachusetts, large transfer stations that are equipped to transport waste long distances by rail may play an important role in managing exceptional amounts of debris generated by a disaster. Assuming these facilities are operational, they have the ability to ship waste to states not affected by the same disaster and that have very large landfills that could accommodate large amounts of disaster debris in the short term without eliminating future capacity options.

4.0 LOCAL GOVERNMENT PLANNING AND RESPONSE

Local government will typically be the lead decision maker and responder during times of emergency, including managing debris from a disaster event. Local governments should be prepared to manage debris from a disaster event within their jurisdiction. In order to respond effectively, it is critical that local governments have a disaster debris management plan in place prior to a disaster event. MassDEP and MEMA have prepared guidance for local government officials on developing a disaster debris management plan, which is available at www.mass.gov/dep/recycle/laws/policies.htm#sw.

Critical aspects of local government planning that should be in place prior to a disaster event include:

- Identify local roles and responsibilities for debris management activities and how they fit into the local CEMP;
- Identify resources to respond to a disaster event, including local government staff and contractors, including establishing contractors/pre-qualifying contractors prior to a disaster event;
- Estimate debris quantities and types from different disaster events (see Appendix B);
- Determine how debris will be cleared and collected;
- Determine a debris management site(s) for temporary debris management, if needed;
- Develop templates for public education and outreach materials; and
- Establish procedures for documentation, monitoring, and record keeping for reimbursement purposes.

State assistance and resources will only be activated if local government resources are fully utilized. At that time, local governments should submit requests for assistance to the State Emergency Operations Center (SEOC). Sections 5-7 cover implementation of the state plan, including pre-planning, developing and maintaining the state plan, and implementing the state plan following a disaster event.

5.0 STATE PRE-DISASTER PLANNING AND PLAN UPDATING

The Debris Plan is an important outline for carrying out a major clean up and to some extent remains a work in progress. Pre-Disaster Planning provides specific areas where additional work would reinforce the Debris Plan. Moreover, the Debris Plan requires on-going validation to ensure coordination with other emergency plans and regulations; regular training to familiarize emergency staff; and routine maintenance reviews and updates.

5.1 Pre-Disaster Planning

MassDEP and MEMA will support implementation of the All Hazards Debris Management Plan on an ongoing basis. These efforts are expected to include:

5.1.1 Local Government Guidance and Assistance

This includes the following steps:

- MassDEP has issued introductory guidance to support local government disaster debris planning; the new guidance titled *Disaster Debris Management Planning: An Introduction for Local Government Officials*, which is available at <http://www.mass.gov/dep/recycle/laws/policies.htm#sw>.
- MassDEP also released a Disaster Debris Plan Checklist to help communities develop their plans to meet the criteria of the FEMA Public Assistance Program (see section 1.7). The Checklist is also posted at <http://www.mass.gov/dep/recycle/laws/policies.htm#sw>.
- MassDEP will work with MEMA to integrate disaster debris planning into the MEMA Comprehensive Emergency Plan Template for emergency management
- MassDEP will review Site Selection Worksheets submitted by local government officials who pre-identify local debris management sites
- MassDEP, in conjunction with MEMA and the Executive Office of Public Safety and Security, will assist in developing training sessions and materials for use by local government officials in developing and enhancing local and regional debris management planning

5.1.2 State Debris Management Sites (DMSs)

In some disaster events, DMS may need to be sited on state-owned property. An interagency team, similar to that described in Section 7.1, should develop GIS analysis to identify state agency property or facilities that would best meet the preferred siting criteria for DMSs.

5.1.3 Volunteer Groups

- Identify volunteer groups such as MAESF- 15 (VOAD).
- Identify tasks appropriate for volunteer groups.
- Prepare sample public information for volunteers.

5.1.4 Debris Forecasting

- Stay informed about the latest debris forecasting methods.
- Develop Massachusetts's debris scenarios.

5.1.5 Hazardous Household Products (HHP)

- Provide sample contracts for HHP collection.
- Maintain updated information on statewide MSA for hazardous products collection – FAC 36.
- Review the coordination between MAESF-3 and MAESF-10.

5.2 Plan Validation and Updating

This plan will be checked periodically by the MassDEP Debris Management Project Team and by MEMA for conformity to applicable State and Federal regulatory requirements and disaster debris management needs. One method to accomplish this task is conducting a tabletop exercise including all tasked organizations. This offers an opportunity to train personnel, but also discuss aspects of the plan that may require updates or revision. Identified issues and changes may be acted upon as the plan changes. Required updates identified during the annual review or due to a significant development will be directed to MEMA. Changes made to the plan will be distributed through MEMA Document Control to recorded holders of plan copies.

5.3 Training

Training should be offered to all key participants to maintain awareness, train new personnel on plan concepts and responsibilities, and identify changes that may have occurred. MEMA conducts a variety of training programs for State agencies as part of the Massachusetts Emergency Management Team concept. Specialized training on technical functions or operation of facilities identified in this plan should be developed by the agencies responsible for those SOPs or functions. For purposes of training, the MassDEP representative to MEMA will serve as the Debris Management Coordinator (DMC).

6.0 STATE PLAN SEQUENCE OF OPERATIONS

The effective execution and maintenance of the Debris Plan relies on careful timing and a progression of various tasks and decisions. Chronologically, the sequence of operations begins with Normal Operations, followed by Increased Readiness, Initial Disaster Assessment, Phase I Debris Clearance, and finally Phase II Debris Removal.

6.1 Normal Operations

Normal Operations encompasses key activities to enhancing the plan; keeping it and its supporting information up-to-date; and to building and maintaining staff readiness to implement the plan. The details of these activities are listed in Section 5.0 State Pre-Disaster Planning and Plan Updating. MassDEP has established a standing Debris Management project team responsible for working with MEMA on ongoing debris management planning, including maintaining and updating the state Debris Plan and providing guidance to support local disaster debris management planning.

6.2 Increased Readiness

Planning shifts to the Increased Readiness phase when a specific disaster event is predicted. This may not always be possible but these steps should be taken when possible.

- Review Debris Plan, attachments and appendices.
- Check for updates to supporting materials such as lists of contractors and solid waste management facilities.
- Draft a short-list of candidates for Debris Management Coordinator.
- Determine what state agency locations may be available to use as debris management sites, depending on the expected location of a disaster event.

6.3 Initial Disaster Assessment

- Initial damage assessment.
- Estimate debris quantities.
- Identify debris-affected area(s).
- Establish Phase I Debris Clearance priorities.
- Determine if state resources should be committed to assist with debris management activities. Criteria to consider include:
 - Imminent threat to public safety.
 - Local government must have declared local emergency.
 - Local resources must be fully utilized, including activating mutual aid agreements with other municipalities and hiring of private emergency contractors (imminent threat must still exist with local assets working for 72 hours).
- If Plan is activated and state resources are committed:
 - Select the State Debris Management Coordinator (see Section 7.3).
 - DMC begins to assemble staff to carry out Phase I and Phase II activities.

6.4 Phase I Debris Clearance

The debris clearance process must be initiated promptly and effectively to protect public safety and health. Phase I emphasizes clearing key roads for emergency access by pushing debris to the edge of the right of way, rather than restoring roads to pre-event conditions. Local resources should be fully utilized before state resources are assigned. During Phase I, there is no attempt to physically remove or dispose of the debris from the roadway, only to clear key access routes to facilitate:

- Public safety
- Emergency access
- Restoration of essential services/utilities
- Damage assessment

Phase I activities will include:

- Prioritize route and critical facility clearance. Priority for route clearance will be as follows:
 - Interstate highways
 - State and US routes
 - Other municipal roadways
 - Emergency access to hospitals
- Clear key emergency access routes
 - Clearance performed 24 hrs/day until access opened.
 - Appropriate assets committed depending upon nature of event.
 - Curb cuts, fire hydrants, valves, and catch basins should be left unobstructed, to the extent possible.
 - State resources will be withdrawn after roads are cleared for emergency access and/or before local resources are withdrawn.
- Coordination with utility companies
 - Utility companies will interface with local Incident Commander on site to coordinate efforts.
 - Utility companies lead cut and clear operation until downed lines de-energized.
 - Check for generators operating in area that could energize street lines.
 - Confirm status of impacted facilities (i.e., power lines, gas lines, etc.)
 - Local government will interface with Dig Safe (1-888-344-7233) to identify impacted facilities.

Phase I also includes activities that lay the groundwork for the long-term clean up during Phase II.

- If Debris Plan is activated, DMC and staff will:
 - Begin dividing disaster area into manageable clean-up zones
 - Approving activation of local debris management sites and, if necessary, state-owned debris management sites
 - Begin contracting procedures for Phase II (see Section 7.6 & Appendices F, G and H)
 - Finalize appropriate debris separations (see Section 3.5 and Appendix I).

The Massachusetts Operational Services Division will be developing Master Service Agreements for Disaster Debris Management and Disaster Debris Monitoring that can be used by any state agency or

political subdivision and may be a helpful resource to contract for solid waste and recycling services in the wake of a disaster. Once established, these can be accessed via the state purchasing system Comm-Pass at www.comm-pass.com.

6.5 Phase II Debris Removal and Management

Phase II Debris Removal and Management is the most critical phase in the Debris Plan. This is the longest phase, running into months or years, where immediate threats to public health and safety have been addressed, but where the major costs of disaster response are incurred. Advance pre-disaster planning (see section 5.0) and timely actions during the Initial Disaster Assessment and Phase I can lay the groundwork for rapid and more cost-effective implementation of Phase II. The following activities should occur during the Debris Removal Phase:

- Eliminate any remaining immediate threats to public health and safety.
- DMC assembles and organizes staff (see Section 7.2 & Fig 1.0).
- Begin documenting all actions and costs (continue work documentation and monitoring through all debris management activities).
- Establish and maintain lines of communication among responsible agencies (see Section 2.0).
- Update and revise damage assessment.
- Divide the disaster area into manageable clean-up zones.
- Assess existing debris management capacity at the local level, including local staff and existing contracts and, if necessary, available state agency resources and contractors (see section 3.4).
- Apply appropriate debris separations to collection and debris management contracts and public service announcements to the maximum extent possible (see Section 3.5).
- Locate and establish any necessary debris sites (see Section 7.4).
- Establish/activate contracts as needed for debris collection, recycling/volume reduction, debris site operation (if necessary), debris monitoring, and hauling and disposal from debris management sites (see Section 7.6 and Appendices F, G and H).
- Inform public of clean-up schedules, separations, and other major parts of the operation (see Section 7.5 and Appendix I).
- Develop inspection teams, or utilize monitoring contractors, to monitor clean-up progress and contractor performance.
- Periodically evaluate clean-up performance and any threats to public health and safety.
- Establish and enforce deadlines at the State and local level for the collection and removal of disaster-related debris.
- Monitor deadlines once established. Monitor progress of affected communities' debris removal operations.
- Properly close debris management sites and return to pre-disaster conditions.

7.0 STATE PLAN CONCEPT OF OPERATIONS

Immediately following a major disaster, disaster assessment teams will be active in the impacted area(s) to estimate the quantity and type of debris, and assist in prioritizing debris removal activities. The debris management task can be divided into two major phases that overlap with general emergency planning phases.

- Phase I - Debris Clearance
During the first 24 to 72 hours after the disaster, debris activities emphasize clearing key roads for emergency access by pushing debris to the edge of the right-of-way, rather than restoring roads to pre-event conditions. This phase is generally concurrent with the response phase of emergency planning. Although Phase I is not the primary focus of the Debris Plan, it is a crucial time for organizing the majority of the tasks outlined in the plan. Debris clearance and utility restoration coordination will expedite clearance of utility impacted debris and restoration of services. Without close coordination, debris clearance and utility restoration may work at cross-purposes, adversely affecting both functions. Good coordination will also yield improved damage and debris assessments and more accurate work scheduling. Debris clearance should also incorporate up-front debris sorting and separation whenever possible.
- Phase II - Debris Removal
This phase entails the actual management of accumulated debris. Depending on the severity of the disaster and the amount of debris, Phase II may last just a few weeks or could take up to a year or longer. Phase II may involve reassessment of debris quantities, operations of debris management areas, public education, and debris separation, collection, storage, recycling, and disposal activities. Debris removal may begin during the emergency planning response phase and will constitute a major part of the recovery phase. Debris removal activities may vary widely depending on whether the disaster event impacts a specific location (e.g., a farm with a disease outbreak) or whether it impacts a widespread area (e.g., a hurricane) and will vary widely depending on the types of debris generated.

The Disaster Debris Plan provides an organizational structure and general principles for managing debris operations at the State level for both phases of the cleanup. This section describes the relationship between the Debris Plan and the Comprehensive Emergency Management Plan (CEMP), and basic elements of the Debris Plan. These elements include: establishing a debris management coordinator; recommended practices for siting, operating and closing management sites; public education and outreach strategies; and contracts for debris management work.

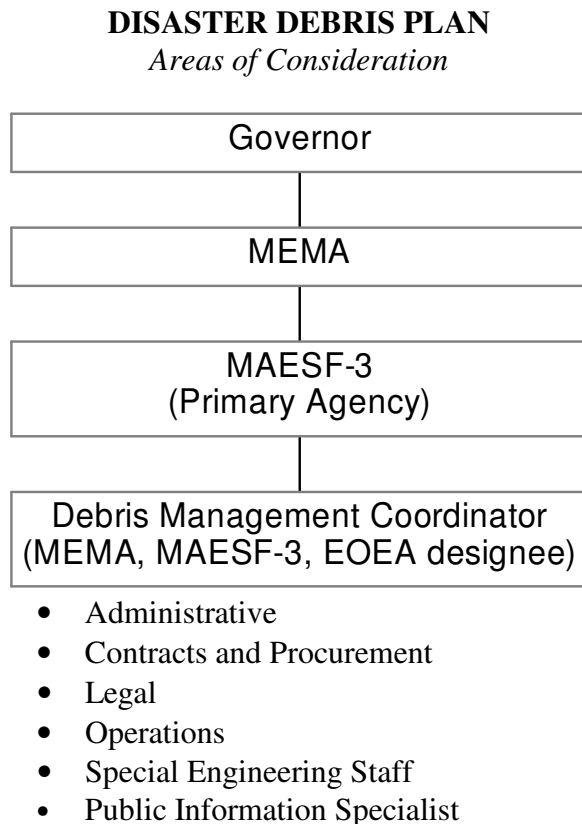
7.1 Command and Control

The Debris Plan would be initiated as part of the State's Comprehensive Emergency Management Plan (CEMP) as coordinated through MEMA. The CEMP organizes State and private disaster relief agencies into functional groups called Massachusetts Emergency Support Functions (MAESF). The Public Works and Engineering function, MAESF-3, is responsible for coordinating and directing public works response activities including debris clearance and removal.

MEMA will activate the State CEMP and notify MAESF personnel to report to the State Emergency Operations Center (SEOC) as outlined in the CEMP. Primary and support agencies for MAESF-3 would report to the SEOC and manage MAESF-3 operations under the management of the MEMA Director and Operations Officer, respectively. Phase I Debris Clearance activities will commence immediately under MAESF-3.

MEMA, the MAESF-3 primary agency, and the Executive Office of Energy and Environmental Affairs (EOEEA) will evaluate initial damage assessment reports to determine if activation of the Debris Plan is warranted. A discussion of the triggers that are required for activation of the plan is included in Section 4.3. Upon activation of the Debris Plan, MEMA, the MAESF-3 primary agency, and EOEEA will appoint a Debris Management Coordinator (DMC) consistent with the job description presented in section 3.3. The DMC, in consultation with the MAESF-3 primary agency, will begin preparations for Phase II Debris Removal.

FIGURE 1.0



7.2 Debris Management Organization

The organization of the Debris Plan under a state Debris Management Coordinator (DMC) seeks to provide early implementation and continuity to the clean-up operation. The specific roles and responsibilities of MEMA, the DMC, and the MAESF-3 change as the disaster event passes from response into recovery.

MEMA has a broad and continuous role in managing debris from activation of the CEMP through to completion of clean-up operations and facilitating any federal reimbursement of costs. During the response phase, MEMA oversees the Phase I Debris Clearance activity of MAESF-3 and the initial estimates of debris quantities; and participates in the decision to activate the Debris Plan and appoint the DMC. MEMA also ensures that all MAESFs, including MAESF-1 Transportation and MAESF-10 Hazardous Materials, are available to provide appropriate support to debris activities.

Once the DMC initiates plan implementation and begins Phase II Debris Removal (either at the end of the response or the beginning of the recovery phase) and the recovery phase has begun, state agencies involved in the CEMP will return to normal operations and the MAESFs will provide support upon request only. MEMA will coordinate this transition in order to maintain the continuity of the clean-up operation, the DMC and staff. MEMA will also coordinate resource needs and federal requirements with the Federal Emergency Management Agency throughout the post-disaster period.

Following the selection of the state DMC, early in Phase I debris removal, the DMC will begin preparations for implementing the Debris Plan. The DMC will assemble staff from the MAESF-3 agencies into an organizational structure along the lines of Figure 1, monitor Phase I operations, and begin adapting the Debris Plan to the current circumstances. The DMC will report to the MAESF-3 lead agency until the MAESF disbands, at which time the DMC will report directly to MEMA. The DMC and staff will manage the clean up through to its conclusion. The Incident Command System (ICS) is an organizational option available to the DMC to structure debris management staff.

7.3 State Debris Management Coordinator

The individual selected to act as the state Debris Management Coordinator will be responsible for managing a workforce engaged in the following types of activities:

- Administrative – Housekeeping, supplies, equipment, etc.
- Contracting and Procurement – Contract development, procurement.
- Legal – Contract review, permits and liability issues.
- Operations – Overall project management and supervision of government and contact resources.
- Special Engineering tasks – Detailed damage assessment, developing scopes of work, developing plans and specifications.
- Public Information – Issuing public service announcements and communicating with local municipalities.

In addition to possessing sufficient technical expertise to successfully motivate, direct and evaluate the performance of staff engaged in the above activities, the coordinator must have:

- The experience and ability to work with and influence decision makers at the highest level of government;
- A thorough knowledge of Massachusetts environmental regulations;
- Thorough knowledge of recycling techniques and landfill and combustion facility operations;
- The ability to simultaneously manage multiple issues associated with a large scale construction project;
- Thorough knowledge of the organization and processes of Massachusetts state government
- The ability to work with and coordinate activities of multiple agencies at different levels of government;
- Knowledge of state procurement practices, use of Debarred Bidders' List, Competitive Bidding/Emergency Procurement requirements of State/Local Governments.

7.4 Debris Management Sites

A debris management site is a temporary location for storing, and/or processing (including recycling and volume reduction) of disaster debris prior to consolidating and shipping to a facility for recycling, composting or disposal. Debris management sites are important in supporting initial debris clearance activities, as well as more efficiently coordinating final debris management. It is anticipated that the primary debris management sites will be designated and operated by local governments and/or their contractors. Activation of state sites would be coordinated by MEMA upon request of the Debris Management Coordinator. Debris management sites should not be used for storing, transferring, processing or otherwise managing debris, except when a State of Emergency has been declared for that area. In normal circumstances, without a declared State of Emergency, these types of operations would typically require solid waste permitting and site assignment.

7.4.1 Site Identification and Location

Whenever possible, locations that can serve as debris management sites should be determined at the local level well in advance of a disaster. If locally designated sites are insufficient to manage the amount of debris generated, state properties will also be considered as potential debris management areas.

Locating effective debris management sites requires evaluating a wide range of factors, including parcel size, topography, and ownership, in addition to past uses of the land and its proximity to residences, water supplies and wetlands. Poorly sited management sites can quickly fill with debris and/or lead to nuisance conditions, contamination of water supplies, damage to other resources, and public health risks.

- Where possible sites generally should not be:
 - within an identifiable or known floodplain and flood prone areas;
 - within 250 feet of a private drinking water supply;
 - within 500 feet of a public drinking water supply;
 - within 100 feet of a surface waste body;

- within 250 feet of a residential dwelling;
 - within an Interim Wellhead Protection Area or Zone II;
 - within an ACEC, endangered species habitat or historic site; and
 - debris storage areas should be at least 100 feet from property lines
- Where possible, storage and management sites should be:
 - owned or controlled by municipal or state government;
 - large enough to accept and store large quantities of debris (recommend 50-100 acre sites for large debris management areas);
 - have easy access, including being near the area of debris generation, be easy to enter and exit, and be near transportation arteries; and
 - ready to use as management areas without extensive site modifications;

While these siting criteria may not always be feasible and should not be viewed as requirements, debris management sites should be chosen with these criteria in mind to prevent public health, nuisance, and environmental impacts. Other issues to take into account when establishing debris management areas include:

- Sites with overhead power transmission lines need careful consideration due to large dump body trucks/trailers used to haul debris, and underground utilities need to be identified due to the potential for site disturbance by truck/equipment traffic and possible site grading.
- It may be necessary to test the soil, groundwater and/or surface water at a proposed management area prior to receipt of debris to know whether contaminants at the site simply represent pre-existing conditions or are due to the operation of the management site.
- Use of inactive or capped landfills as debris sites eliminates the burn option due to explosion potential from methane in landfill gas. Closed landfill sites also may be poor sites due to the potential to damage the landfill cap. MassDEP does not want these sites to turn into default disposal sites operating without a valid site assignment or permit, which is a potential risk when debris is brought to a closed landfill site as a management area.

Operationally, debris management sites provide a location for trucks to haul to, or the public to self-haul, disaster debris where it can be stored pending transportation to recycling or disposal facilities, or it can be chipped, crushed, or burned on site, or some combination of these activities. Debris management sites also will be used to consolidate debris into larger trucks and/or rail cars for shipment to recycling, composting, or disposal facilities. The combination of activities that may occur at a given site will be a function of the type of debris managed (see Section 3.5) and the characteristics of the site. The sites should be operated in such a way to maintain separation of pre-sorted debris, control access to the site, and minimize nuisance conditions (i.e., noise, dust, and odor) and other environmental impacts. Sites may be managed directly by a public agency or privately under contract (see Section 7.6).

Debris management sites may be of different sizes and have different siting criteria depending on the type and volume of materials they are intended to handle. For example, sites that will need to accept

large amounts of vegetative waste and building debris (the two largest debris streams in most disaster events) would need to be very large sites with flat open areas that could accommodate very large amounts of debris. Such sites would likely need to operate for a long period of time before they can be fully cleared out and closed. On the other hand, some sites may be used for smaller volume debris streams such as white goods (appliances), electronics, and hazardous household products and may be able to be operated at smaller sites such as local Departments of Public Works facilities, transfer stations, or recycling centers.

7.4.2 Management Site Operations

Debris management sites are only intended for use during a disaster event and state of emergency and associated debris management activities. In the absence of an emergency, these sites and activities would be subject to solid waste permitting and site assignment regulations. During a declared state of emergency, MassDEP expects to waive these regulatory requirements to allow the temporary operation of debris management areas for up to 90 days. Entities that need to operate a DMS beyond that 90 day period will require separate approval from the solid waste section chief in the appropriate MassDEP regional office.

Management sites should have:

- Stormwater controls, such as silt fences, to prevent discharge of contaminated runoff into water bodies;
- Controls to prevent offsite migration of dust, wood chips or other debris residuals from vehicular traffic and from the handling of debris;
- Spotters to correctly identify and segregate waste types for appropriate management;
- Fencing surrounding the operating areas of the site;
- An attendant during operating hours;
- Access control and security measures after operating hours to limit unauthorized access to the site;
- Signs to inform haulers and the general public of the types of waste accepted, hours of operation, and who to contact in case of after hours emergency;
- Fire control equipment available on site

Other Best Management Practices

To the maximum extent possible, debris received at the management site should be separated into the following categories and should be stored separately to minimize cross-contamination:

- Vegetative Waste

- C&D debris
- White goods
- Household trash and bulky waste
- Other separated recyclable categories where applicable (i.e., metal, asphalt, brick and concrete, etc.)

One of the main functions of a debris management site will be to serve as volume reduction and consolidation areas for debris brought to the sites from the impacted areas. Volume reduction methods may include recycling, chipping for mulch, chipping for biomass fuel, and burning. For grinding and chipping to be feasible, the chipped material must have a viable use either as mulch or as wood chips for fuel.

Other debris, such as C&D debris, household waste, etc. should not be mixed with vegetative waste at a management site. Only clean vegetative waste should be chipped. Incoming waste loads containing non-vegetative debris and other unauthorized wastes shall not be unloaded at the vegetative debris portion of the site. It is the responsibility of the operator to remove and properly dispose of any unauthorized, non-vegetative wastes that were inadvertently or illegally disposed at the site. Mixed C&D debris should be sent to a C&D processor that can separate and divert metal, asphalt, brick, and concrete, wood and other materials, when possible. If C&D debris contains asbestos, it must be managed as regulated asbestos containing material. Trash delivered to the management site shall be placed in transfer trailers at the end of the working day, and all windblown/scattered debris shall be picked up at the end of the day.

In accordance with the National Fire Protection Association, mulch and chip piles should not exceed 18 feet in height, 50 feet in width or 350 feet in length. Piles should be subdivided by fire lanes at least 25 feet wide around each pile. These piles should not be compacted. Smoking should only be allowed in designated areas well away from any combustible material. The local fire department shall be notified upon commencement of debris management site activities.

Notification and Inspection

- Within 48 hours of opening a debris management site, the municipality should submit a written notification to MassDEP which would include:
 - A description of the nature of the site operations (types of material accepted and how managed, operating hours)
 - A description of the physical address and, if available, GPS coordinates;
 - A description of any operating conditions or practices not addressed in this guidance;
 - Where materials will be sent from the management site; and
 - A local contact person and that person's contact information (where possible).
- MassDEP reserves the right to inspect the management site operations at all reasonable times. Additional operating conditions may be required by MassDEP to address public health, environmental, or nuisance concerns.

- The site owner or operator should track all operating costs in accordance with FEMA requirements, in the event that cost reimbursement is pursued with FEMA.

Operation of Air Curtain Burners and Management of Ash Residue

MassDEP generally does not support air curtain burning of debris, where other debris management activities such as chipping for mulch or fuel chips are available. If the volume of vegetative waste is more than grinding and chipping operations can handle, burning may be an appropriate method of volume reduction. However, permit approval for burning will be limited to clean vegetative waste and will only be granted after all other volume reduction methods have been exhausted. If burning is permitted, air curtain pit burners will be the preferred method. Open burning will be considered an option of last resort.

In air curtain burning, material is burned in a burn pit or refractory lined box, aided by fan-forced air. The air curtain equipment consists of a large capacity fan, air ducts, a manifold, and in some cases a steel refractory lined box. In some cases berms may be constructed to create a pit. The manifold directs a curtain of air over the burn pit or box. The air curtain, which acts as a lid for the incinerator, is deflected off the far wall of the burn pit into the fire, providing excess oxygen that increases fire temperature and results in more complete combustion. Air curtain units may be constructed close to the site of the materials and can reasonably reduce the volume of vegetative matter that is of low value for other uses. If air curtain burning is allowed, the site operator may use only fossil fuels, e.g. diesel, kerosene, to ignite the fire. Burning of tires, asphalt shingles, and other similar materials will not be allowed.

However, air curtain units have limited application and may be a slower debris processing method than chipping, as they must be shut down from time to time as ash builds up and needs to be removed. Prior to removal, the ash must be allowed to cool for at least two hours, and then removed for proper disposal or use, if approved by MassDEP. No burning shall be allowed within 1000 feet of any building, other debris, or vegetation, or as required by the local fire department. Controlled burning is prohibited within 1500 feet of a commercial or private airport property or any area associated with airport flight operations.

7.4.3 Debris Management Site Closure

Debris management areas should only be operated as long as it is necessary to store and process disaster debris that cannot be handled by the existing solid waste management infrastructure. These are only intended to operate as temporary management areas, not as ongoing solid waste facilities. Debris is expected to be processed and removed from management areas as quickly as possible so that debris can be safely managed and the site expeditiously returned to its previous use. Once this activity is completed, debris management areas must be properly closed. Otherwise they may be subject to MassDEP enforcement.

Final written approval is required from the MassDEP solid waste section chief in the region the site is located to consider any debris management site to be properly closed. The management site operator should contact the appropriate MassDEP regional office to discuss what is necessary for site

closure and should again notify the regional office when closure is deemed complete. Depending on the amount of debris generated by a disaster, closure of processing/recycling sites shall generally be within six (6) months of first receiving waste. If site operations will be necessary beyond this time frame, permitting of the site by the Solid Waste Section may be required.

Management sites should meet the following guidelines to ensure proper closure:

- Within 90 days of completing processing at a chip site, all chips and mulch shall be removed for beneficial uses, unless MassDEP approves storage of these materials at the site for a longer period. All other recyclable materials should be sent to a recycling facility prior to closure.
- Unprocessed wood wastes at a chip site, or other materials that cannot be diverted from disposal, must be removed and sent to an appropriate disposal site prior to closure.
- Prior to closure of the storage site, all remaining debris, equipment, and other materials must be removed and delivered to a proper disposal or recycling facility and the site should be restored to its original condition to the maximum extent possible.
- At close-out, final testing of soil, water, and air quality should be compared to original conditions.
 - Areas that were only used to stage vegetative debris, or ash from burning solely vegetative debris, will not require any environmental sampling after the debris or ash is removed unless there is reason to believe that the area may have become contaminated (e.g., significant visible staining or known contaminant releases in the area).
 - Areas that were used to stage mixed debris, or ash from burning mixed debris, will normally require environmental sampling after the debris or ash is removed unless there is reason to believe that no contamination occurred.
 - When environmental sampling for soils and groundwater is needed, it should typically include at least one soil sample and one groundwater monitoring well in areas showing significant visible staining or areas believed to be impacted by the staged waste or ash. Unless otherwise approved by MassDEP, these samples should normally be analyzed for total RCRA metals, volatile organic compounds and semi-volatile organic compounds using approved EPA methods. MassDEP may also require other approaches to conducting environmental sampling at management areas on a case-by-case basis.

7.5 Debris Monitoring

When a disaster event occurs that produces large amounts of debris, effective coordination is required between municipal, State, and FEMA officials to ensure that debris removal operations are efficient, effective, and eligible for FEMA Public Assistance grant funding. Eligible applicants are encouraged to monitor debris removal operations and document eligible quantities and reasonable expenses to ensure that the work is eligible for Public Assistance grant funding. Failure to do so properly may jeopardize this funding.

Monitoring debris removal operations requires comprehensive observation and documentation by the applicant of debris removal work performed from the point of debris collection to final disposal. Monitoring debris removal work involves constant observation of crews to ensure that workers are performing eligible work.

In order to ensure that debris monitoring is completed adequately, MEMA will work with an inter-agency procurement team to establish a statewide contract for disaster debris monitoring services. This contract will include monitoring of debris collection and operation of temporary debris management sites, as well as establishment of recordkeeping and tracking systems to efficiently debris removal work and expenses.

7.6 Public Education

Because of the disruption of normal communication channels during a disaster, communication regarding disaster debris collection needs to rely on alternate outreach methods than those typically used for regular program outreach. While information will continue to be provided via state web sites, public education on debris separation and collection will also need to include handing out fliers on debris management at emergency shelter and assistance sites and public service announcements (PSAs) for radio broadcasts.

Fliers and PSAs should specify where residents should bring their debris or the schedule for curbside pick-up, as appropriate. In either case, the PSAs should explain how to separate debris into the appropriate piles as described in Section 3.5. Residents should also be notified via multiple outreach channels of special collection events for specific materials so that these collections can collect as much material as possible and operate as efficiently as possible. Effective public outreach will reduce the need to hold multiple collections for the same materials in the same areas. A sample PSA is included in Appendix F. In the event that Management Sites are utilized, public education should also provide details about how these sites will operate and where they are located.

7.7 Contracts

Debris on public property that must be removed to allow continued safe operation of governmental functions or to alleviate an immediate threat is considered an eligible cost. Managing a large quantity of debris may require Municipalities and state agencies to get additional resources. Municipalities and state agencies have four options for purchasing debris management services:

- Mutual aid agreements with other municipalities within the designated counties (e.g. for sharing chipping or grinding equipment may be used to assist with debris management costs). The costs would be reimbursed through the municipality using the shared equipment and requesting the reimbursement.
- Use an existing municipal contractor to provide services (e.g., an existing contract for yard waste collection or chipping and grinding vegetative debris) as long as the original

contract's estimated dollar value will not be exceeded. Massachusetts plans to establish a comprehensive statewide debris management contract, and expects that municipalities, as well as state agencies, would be able to procure services under this master contract.

- Use an existing state contract to manage debris. State Contracts are administered through the MA Operational Services Division and these contracts are generally open to cities and towns. Billing for these contracts can be based on unit measure as opposed to time and materials, as stated under Section Two of the original RFR.
- Establish a new contract specifically for the purpose of managing the disaster debris. In order to make available additional resources to manage debris in the event that local and state government resources and existing contracts are overwhelmed, the Commonwealth will establish a statewide contract for disaster debris management that can be used by both state agencies and political subdivisions on an as-needed basis. Massachusetts will coordinate with FEMA and USACE to ensure that this contract is consistent with federal public assistance reimbursement requirements.

As a condition of eligibility, FEMA requires that any contracted services must be competitively procured in accordance with federal, state, and local purchasing requirements. Contracts should include a scope of work that clearly designates the specific services requested (e.g. specific areas from which the contractor will collect the debris; what their responsibilities will be - collection only; grinding only; collection, chipping, grinding and final management) and should include a schedule for completion of the requested work. Contracts should be bid and billed for on a unit basis (cost per cubic yard) – contracts paid on an hourly basis are generally not reimbursable by FEMA. Any costs incurred must be fully documented in detail. It also is important that there are procedures in place to monitor and oversee contractor performance.

Contracts let during Phase II Removal should complement and reinforce the separation of debris as outlined in Section 3.5. Separating debris as close to the source of debris generation as possible will greatly facilitate later handling for recycling or burning. Collection and hauling contracts need to include terms that encourage debris separation and would penalize contractors for mixing debris. For instance, contract provisions, including payment terms, should reward contractors for collecting separated debris, maintaining debris separation, and delivering separated materials to recycling facilities over disposal facilities.

Contracts for debris site operations should also reinforce debris separation. Provisions should require that different categories of debris are placed in separate piles and/or that the site can reward or penalize a hauler for delivering separated or mixed debris.

Solid waste recycling facility contracts may allow for the rejection of mixed loads; landfill contracts would allow for the rejection of separated loads of recyclable, compostable, or otherwise divertable materials. Variable tipping fees may also be used to reflect properly separated loads from more costly to manage mixed loads.

Any master contract for a single firm to oversee multiple aspects of the clean up and various sub-contractors should contain performance language relative to debris separation. Along the same lines, tasks assigned to government agencies during Phase II should emphasize debris separation. For cost recovery purposes, contracts should ensure that debris clearance management activities are done in accordance with state and federal regulations and that costs are properly documented.

Table 2.0

DEBRIS PLAN ACRONYMS

ABC	Asphalt, Brick, and Concrete rubble
C&D	Construction and Demolition debris
CEMP	Comprehensive Emergency Management Plan
DCAM	Division of Capital Asset Management
DCR	Division of Conservation and Recreation
DMC	Debris Management Coordinator
DMS	Debris Management Site
EEA	Executive Office of Environmental Affairs and Energy
EOPSS	Executive Office of Public Safety and Security
EOTC	Executive Office of Transportation and Construction
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GIS	Geographic Information Systems
HHP	Household Hazardous Products (HHP) – also:
HHW	Household Hazardous Waste
LOA	Letter of Agreement
MAA	Mutual Aid Agreement
MAESF	Massachusetts Emergency Support Function
MassDEP	Massachusetts Department of Environmental Protection
MEMA	Massachusetts Emergency Management Agency
MHD	Massachusetts Highway Department
MOU	Memorandum of Understanding
MSW	Municipal Solid Waste
NVOAD	National Volunteers Active in Disaster
PA	Public Assistance
PIO	Public Information Officer
ROW	Right of Way
SEOC	State Emergency Operations Center
USACE	US Army Corps of Engineers
VOAD	Volunteers Active in Disaster