MSP/EMHSD Pub. 105
September 2013
Emergency Management and Homeland Security Division
Michigan Department of State Police

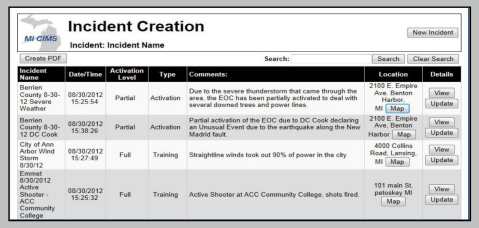
MICHIGAN RAPID IMPACT ASSESSMENT TEAM ASSIGNMENTS AND STANDARD OPERATING PROCEDURES

BASIC GUIDANCE AND TRAINING HANDBOOK FOR MRIAT REPRESENTATIVES (INCLUDES RELEVANT ELEMENTS OF MSP/EMHSD PUB. 901)

This document was prepared under a grant from FEMA's Grant Programs Directorate, U.S. Department of Homeland Security. Points of view or opinions expressed in this document are those of the authors and do not necessarily represent the official position or policies of FEMA's Grant Programs Directorate or the U.S. Department of Homeland Security.

QUICK REFERENCE PAGE: INCIDENT CREATION AND DAMAGE ASSESSMENT REPORTING

MI CIMS Incident Creation Board



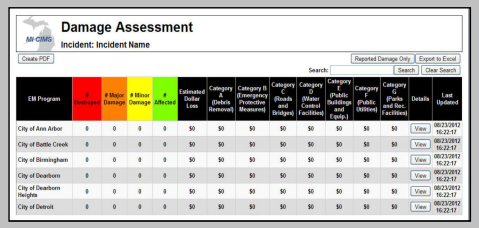
Created By

An incident may be created by local emergency management program jurisdictions (EMC, Assistant EMC, and EM staff positions), by MSP/EMHSD District Coordinators, by state department / agency EMCs, or by the SEOC Operations Section Chief or Logistics Section Chief, using the Incident Creation board. The Incident Creation board allows incidents to be created, and other users to be notified that the incident is available for them to log in to.

Once created, an incident can be updated but it should **NOT** be duplicated in the MI CIMS. Only **ONE** entry should be made for a specific incident, with updates made as appropriate. Updated information pertaining to a created incident can also be entered in the Activities Log, Significant Events board, and other appropriate boards within the MI CIMS.

Note: MSP Posts do not have Incident Creation rights within the MI CIMS. MSP Posts (per Official Order No. 40) should work with the local emergency management program jurisdiction or MSP/EMHSD District Coordinator to create an incident, if not already done. If the MI CIMS is inoperable or not accessible / unavailable, MSP Posts should work with the local emergency management program jurisdiction or MSP/EMHSD District Coordinator to file an Incident Creation report using the prescribed back-up form and method in order to meet the Official Order No. 40 requirements.

MI CIMS Damage Assessment Board

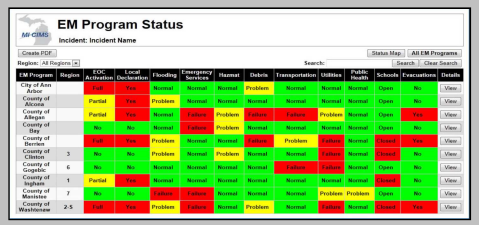


Submitted By

Local emergency management program jurisdictions and state departments / agencies report damage and impact assessment information via the Damage Assessment board. Local emergency management program jurisdictions report both public and private damage. State departments / agencies report damage to those public facilities, infrastructure, etc. that fall under their stewardship, as well as impacts to their ability to provide services. SEOC Section Chiefs have the capability to update damage assessment information submitted by any emergency management program jurisdiction or state department / agency.

Note: Public damage is reported via the established federal Public Assistance (PA) damage categories – i.e., Categories A and B (Emergency Work) and Categories C-G (Permanent Work). The board automatically totals both public and private damage information.

MI CIMS EM Program Status Board



Submitted By

The EM Program Status board contains 11 Essential Elements of Information (EEI) which must be reported by local emergency management program jurisdictions once an incident is created. These EEI are color-coded gray (no status reported), green (normal), yellow (problem exists), and red (severe) to signify their current status. Once the EEIs are initially reported, they must be updated periodically as conditions change for better or worse.

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Record of Major Changes – September 2013 Edition of MSP/EMHSD Publication 105

Subject	Change	Location
E Team References and Reporting Forms	**Replaced all E Team references and reporting forms with applicable equivalents for the new MI CIMS ("WebEOC").**	Throughout document
Back-Up Submittal Methods	**Revised back-up submittal forms and processes. Forms now have to be submitted only to the MSP/EMHSD office and MSP/EMHSD District Coordinator. MSP Operations and the local MSP Post Commander are no longer required to be copied.**	MI CIMS primary and back-up reporting forms and guidance contained in Michigan Damage Assessment Handbook
Degree of Damage Categories	**Degree of damage categories adjusted to reflect current FEMA PDA guidance found in FEMA Publication 9327.2-PR, "*Preliminary Damage Assessment for Individual Assistance Operations Manual,*" July 2012 edition. Text and photo examples for damage categories revised to sync with FEMA guidance. Damage Classification: Rapid Evaluation Matrix and Damage Survey Worksheets revised to reflect adjusted degree of damage categories.**	22-27; 29-31
Guidelines for Disaster Photography	**Added guidance text and photograph examples of aerial damage assessment photography.**	39-40

PURPOSE

The Michigan Rapid Impact Assessment Team (MRIAT) will be activated as required to assist the Michigan State Police / Emergency Management and Homeland Security Division (MSP/EMHSD), the Executive Office, affected state agencies, and local and tribal governments in assessing the nature, scope, magnitude, anticipated duration, and severity of disasters and emergencies. The MRIAT allows the State to take a more proactive role in determining the damage and negative impacts caused by a disaster or emergency to the built and natural environments, essential services, critical facilities and infrastructure, and the affected population.

TEAM STRUCTURE AND ORGANIZATION

The MRIAT is composed of a variety of Michigan state agency subject matter experts, plus a liaison from the American Red Cross (see table on pages 5-6). The MRIAT structure and organization has been developed by the MSP/EMHSD based on the assessment needs required for the disasters and emergencies typically faced by Michigan communities. Not every agency will be activated for each disaster or emergency; rather, agencies will be activated on a need to respond basis. The MSP/EMHSD will determine the appropriate agencies for activation based on the unique needs of each situation.

MSP/EMHSD Representatives. The MSP/EMHSD District Coordinator for the affected area (or assigned from an adjacent area) will function as Team Leader. The Team Leader's primary responsibilities include:

- Coordinating team actions
- Setting survey priorities
- Assigning tasks to team members
- Handling logistical concerns
- Serving as a filtering mechanism for information processing (ensuring that good information is being collected and analyzed)
- Serving as team spokesperson
- Serving as a liaison to local officials

(See "Assignments and Responsibilities" for a complete list of responsibilities.)

Other MSP/EMHSD personnel on the MRIAT include:

- The State Public Assistance Officer (to coordinate public damage assessment activities)
- The State Hazard Mitigation Officer (to assess potential mitigation opportunities and measures)
- The State Individual Assistance Officer (to assist in assessing the impact on people)
- A Computer / Geographic Information System (GIS) Specialist (if circumstances warrant) to coordinate the electronic collection, compilation, and reporting of damage and impact estimates.

Local / Tribal Representatives. If at all possible, one or more local and/or tribal officials will accompany the MRIAT to assist in locating the damaged areas and to review and verify the information collected. This local / tribal representative is a critical component of the team, as one of the team's basic tenets is to work in partnership with the affected communities.

State Agency Representatives. Depending on the situational circumstances, state agency representatives may be activated to assist in assessing damage and impacts to people, property, essential services and systems, and the environment. Whenever possible, state agency representatives will be assigned to survey work that is consistent with their normal day-to-day responsibilities (e.g., highway engineers will assess road damage; sanitary / environmental engineers will assess damage to water and wastewater utility systems, etc.). Also, every attempt will be made to activate state agency personnel that are actually based or work in the affected area on a regular basis. That way, the representative will be familiar with the local area (and perhaps the local officials), as well as any unique problems specific to the area.

Universal Function. Circumstances may require that state agency representatives be assigned to conduct surveys of damaged homes and businesses – even though that may not be their primary field of expertise. Home and business damage surveys can be labor intensive and time consuming, and therefore may require a sizeable cadre of state personnel to assist local officials in completing these surveys in a timely manner. Conducting home and business damage surveys is a universal function of all MRIAT members, regardless of their primary field of expertise.

CONCEPT OF OPERATION

The MRIAT will work in partnership with appropriate local and/or tribal officials and will focus on time-sensitive and emergency need requirements. Emphasis will be placed on the impacts to people and community facilities and systems. The team will quickly:

- Assess the nature, scope, magnitude, severity, and expected duration of the situation
- Determine immediate resource needs
- Determine the extent of damage to and impact on public infrastructure and essential services
- Determine the probable extent of the state role in response and recovery operations

In most circumstances, the team will have a goal of completing its assessment activities within 36-48 hours of arriving at the scene. Speed will be of paramount importance. Assessment information must be timely to be of any real value. The Team Leader will determine survey assignments and working hours for team members based on the needs of the situation.

Incident Management System. The MRIAT will operate under the SEOC Incident Management System (IMS) as prescribed in the Michigan Emergency Management Plan. The SEOC IMS is consistent and compatible with the National Incident Management System (NIMS), per federal requirement. As the chart on the following page illustrates, the SEOC IMS consists of the five standard NIMS sections: Incident Management; Operations; Planning; Logistics; and Finance / Administration. The MRIAT is organized under the SEOC Planning Section, Damage Assessment Unit.

The SEOC IMS can be modified as needed to address situational circumstances and incident size / type. The decision to activate or deactivate the various sections of the IMS structure rests with the Incident Commander. In many cases, the IMS structure may change several times during the different stages of an incident, based on the particular needs at that time. Following are brief descriptions of the roles and responsibilities of the five SEOC IMS sections:

Incident Management Section. Composed of the Governor, the State Director and/or Deputy State Director of Emergency Management and Homeland Security, and various other representatives from the executive, legislative, and judicial branches of state government, this section develops policy, disseminates information, and coordinates SEOC response and recovery operations. The Incident Commander coordinates section activities.

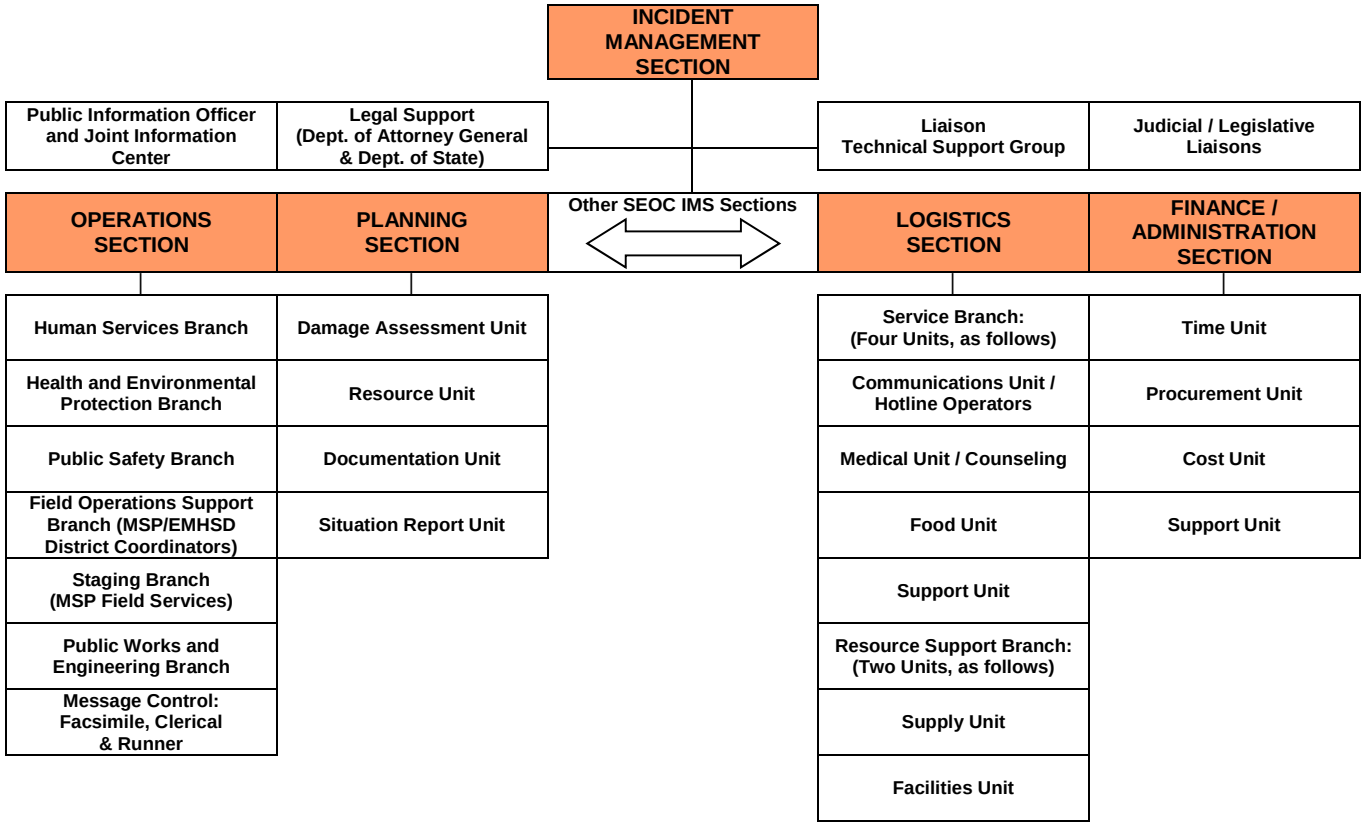
Operations Section. Composed of agency / organization directors and/or their representative, i.e., Emergency Management Coordinator (EMC), this section directs and coordinates involved personnel and resources to implement assigned tasks and missions. The Operations Section Chief coordinates section activities.

Planning Section. Composed of MSP/EMHSD personnel and where appropriate representatives from other agencies and organizations, this section collects, compiles, analyzes, synthesizes, and reports on damage assessment information from local jurisdictions, tribal governments, state agencies, federal agencies, private organizations, and the media. This section also makes that information available to the other SEOC sections for their use in response and recovery decision making. The Planning Section Chief coordinates section activities.

Logistics Section. Composed of MSP/EMHSD personnel and where appropriate representatives from other agencies and organizations, this section provides for the logistical needs of the SEOC – including food, water, medical needs, information technology, communications, and other necessary resources. The Logistics Section Chief coordinates section activities.

Finance / Administration Section. Composed of MSP/EMHSD personnel and where appropriate representatives from other agencies and organizations, this section identifies, tracks, and compiles incident-related costs – including personnel costs, equipment and material costs, and contract costs. The Finance / Administration Section also works with the Incident Management Section to arrange for state and/or federal supplemental appropriations to cover incident costs. The Finance / Administration Section Chief coordinates section activities.

SEOC Incident Management System



Field Coordination Facility. Once activated, the MRIAT will operate out of the affected local jurisdiction's Emergency Operations Center (EOC) or a State Command Post (generally co-located with the Incident Command Post). If operational needs dictate that a separate field coordination facility be established to support team activities, the Team Leader will arrange for such a facility (preferably within the impacted area). This space could be anything from an office or conference room in a public building, to a hotel / motel room, to a temporary structure brought to the incident scene (i.e., tent or mobile trailer).

Timing of Work. Generally, the team will complete its work prior to the State requesting a Preliminary Damage Assessment (PDA) and federal disaster or emergency declaration from the President. In fact, the team's findings (along with assessment information formally submitted by the affected local jurisdictions and state agencies) will form the basis for determining if state assistance is required and if the State should request federal assistance through a Stafford Act declaration. See page 7 for a timeline depicting a typical progression of events in a disaster or emergency.

If the situation is of such a catastrophic nature that a federal damage assessment team is activated by FEMA and deployed to Michigan, the MRIAT will be integrated into the federal assessment team structure to prevent needless duplication of survey activities.

ASSUMPTIONS

The following basic assumptions will guide MRIAT operations:

- Team representatives have the full support and commitment of their respective agencies to participate in all facets of the MRIAT's operations (including pre-event training activities).
- Participating agencies agree to reimburse their team representatives for all appropriate out-of-pocket expenses incurred while traveling to and from the incident scene and performing approved survey work. Team members will be expected to submit travel / expense vouchers for the purpose of reimbursement unless arrangements can be made to have expenses direct-billed to the agency.
- Team representatives will perform survey work and other approved activities in accordance with the procedures and guidelines prescribed in this document and in MSP/EMHSD Publication 901 (Michigan Damage Assessment Handbook), the instructions given to them by the Team Leader, and the Memorandum of Understanding signed between their agency and the MSP/EMHSD.
- MRIAT policies and procedures are compliant with the National Incident Management System (NIMS) and Incident Command System (ICS) protocols. All MRIAT operations will be conducted using NIMS and ICS protocols.
- The MRIAT will remain intact until all appropriate assessments have been completed or until the Team Leader officially deactivates the team.
- If overnight accommodations are required, team representatives will be housed in the affected area unless safety concerns or a lack of accommodations dictate otherwise. This allows for longer workdays and cuts down on transportation time and expenses.
- In situations where a disaster or emergency appears imminent, the MRIAT may be pre-deployed so that assessments can begin as soon as conditions allow.
- All MRIAT members – regardless of their primary field of expertise – should be able to assist in conducting assessments of damaged homes and businesses. This is a universal assessment function.

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MRIAT Structure

Agency		Primary Function(s)	Universal Function*
Michigan Dept. of State Police / Emergency Management and Homeland Security Division (MSP/EMHSD)		Team coordination and leadership; public information; logistics; liaison with local jurisdictions; hazard mitigation; disaster debris management needs assessment; disaster logistics management needs assessment; development of final assessment.	Damage to residential and commercial structures
Michigan Dept. of Agriculture and Rural Development (MDARD)		Damage / impact to agricultural resources and inter-county drains; pesticides hazard assessment.	Damage to residential and commercial structures
Michigan Dept. of Community Health (MDCH)		Investigation / control of communicable disease and other public health threats; crisis counseling needs assessment; damage / impact to health and medical facilities; technical advice regarding WMD attack impacts (i.e., on public health).	Damage to residential and commercial structures
Michigan Dept. of Licensing and Regulatory Affairs (MDLARA)		Damage / impact to residential and commercial structures; workplace / responder safety issues; energy infrastructure damage.	Damage to residential and commercial structures
Michigan Dept. of Human Services (MDHS)		Human service needs assessment; disaster donations management needs assessment.	Damage to residential and commercial structures
Michigan Dept. of Technology, Management and Budget (MDTMB)		Damage / impact to state facilities, residential and commercial structures.	Damage to residential and commercial structures
Michigan Dept. of Military and Veterans Affairs (MDMVA)		Restoration / repair of public facilities; debris clearance; technical advice regarding WMD attack impacts (i.e., via 51st WMD Civil Support Team).	Damage to residential and commercial structures
Michigan Dept. of Natural Resources (MDNR)		Damage / impact to natural resources (forests and wildlife) and state parks and recreation areas.	Damage to residential and commercial structures
Michigan Dept. of Environmental Quality (MDEQ)		Environmental contamination (hazardous materials, surface water / groundwater, radiological, hazardous disaster debris); flood hazard management; dam safety.	Damage to residential and commercial structures

MRIAT Structure (cont.)

Agency		Primary Function(s)	Universal Function*
Michigan Office of Services to the Aging (MOSA)		Human service needs assessment (for elderly); damage / impact to home and community-based senior services.	Damage to residential and commercial structures
Michigan State Housing Development Authority		Building and construction needs assessment; damage / impact to residential structures and neighborhoods.	Damage to residential and commercial structures
Michigan Dept. of Transportation (MDOT)		Damage / impact to transportation facilities and related infrastructure; general engineering expertise.	Damage to residential and commercial structures
American Red Cross (ARC)		Liaison will provide information on relevant Red Cross assessment activities and findings.	Damage to residential structures (but not commercial)

*Note: All MRIAT members – regardless of their primary field of expertise – are expected to assist (if needed) in conducting surveys of damaged homes and businesses. This is a universal assessment function.

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MRIAT Approximate Sequence of Team Activities

Activity	State Actions / Implications
Incident occurs	• Depending on situational circumstances, state agency staff may be actively involved as first responder or in direct contact with first responders
▼	▼
Local EMC or state agency staff creates incident in MI CIMS	• MI CIMS information (i.e., on Incident Creation, EM Program Status, Damage Assessment, and other appropriate boards) analyzed by MSP/EMHSD staff • Affected MSP Post may also contribute information regarding incident (initially with local jurisdiction or via update) per MSP Official Order No. 40
▼	▼
Local EM and MSP/EMHSD District Coordinator conduct joint assessment	• If necessary, immediate state assistance provided to protect public health and safety **(GENERALLY COMPLETED BY DAY 1-2 OF INCIDENT)**
▼	▼
(IF WARRANTED) **MRIAT deployed to affected area**	• Pre-deployment briefing conducted by MSP/EMHSD • If possible, team will travel together to affected area
▼	▼
MRIAT and local officials conduct joint assessment	• Team determines impacts on people, public facilities, private structures, essential services, and the local economy • Team findings provided to MSP/EMHSD and local officials for compilation, summarization, and evaluation **(GENERALLY COMPLETED BY DAY 3-5 OF INCIDENT)**
▼	▼
(IF WARRANTED) Governor issues declaration under 1976 PA 390; state response / recovery assistance provided	• Team findings and initial damage assessment reports provide basis for declaration recommendation by MSP/EMHSD • (In widespread and/or severe incidents, Governor's declaration may be issued earlier in the incident response)
▼	▼
Damage assessment information finalized	• Team findings are incorporated into MI CIMS boards and other reports as appropriate **(GENERALLY COMPLETED BY DAY 3-7 OF INCIDENT)**
▼	▼
(IF WARRANTED) Preliminary Damage Assessment (PDA) requested through FEMA Region V	• Team findings and finalized damage assessment reports provide basis for requesting PDA • Some team members may also represent State of Michigan in PDA process • (In particularly severe incidents, PDA request may be expedited. Federal "forward leaning" posture may result in earlier arrival of federal incident assessment assets.) **(GENERALLY COMPLETED BY DAY 8-14 OF INCIDENT)**
▼	▼
(IF WARRANTED) Federal Stafford Act declaration requested through FEMA Region V	• Team findings incorporated into PDA report and Governor's letter of request for declaration **(GENERALLY COMPLETED BY DAY 15-30 OF INCIDENT)** • (In particularly severe incidents, Governor's request may be expedited per established federal process)

NOTIFICATION AND ACTIVATION

The MRIAT will be activated by (and at the discretion of) the MSP/EMHSD and/or Executive Office when disasters or emergencies occur that warrant state assistance in assessing damage, impacts, and resource needs. Generally, MRIAT involvement will be limited to those situations that are 1) "highly problematic" from a technical standpoint; 2) are large-scale or widespread in nature; or 3) are "high profile" due to intense citizen and/or media interest. Most emergencies and smaller disasters do not fall into one of those categories.

Activation of the MRIAT may be initiated at the request of a local jurisdiction or tribal government (through the EMC) and/or the recommendation of the MSP/EMHSD District Coordinator, or upon request of the Executive Office. The MSP/EMHSD will evaluate all requests for activation and make the final determination as to whether to activate the MRIAT. If the MRIAT is activated, the MSP/EMHSD District Coordinator will notify the local jurisdiction / tribal government of the anticipated arrival time of the team and the necessary preparations that must be made.

The MRIAT will normally be activated prior to a Governor's emergency or disaster declaration and mobilization of state assistance (although that may not always be the case). Generally, the MRIAT will complete its work prior to the State requesting a Preliminary Damage Assessment (PDA) and federal Stafford Act disaster or emergency declaration from the President (see timeline on page 7).

Notification of State Agency Representatives. State agency representatives will be notified and activated through the designated EMC for the agency. In the event the EMC or the designated alternates are not available, activation may be initiated through contact with other appropriate agency management staff. In some circumstances, initial contact may be made directly by MSP/EMHSD Command Staff from the current team roster.

Pre-Deployment Briefing. Once activated, team representatives will receive instructions as to where and when to report for a pre-deployment briefing. At that briefing team representatives will discuss team operations, including but not necessarily limited to:

- Travel and logistical concerns
- Survey assignments
- Survey methodology
- Information collection, compilation and reporting
- Public relations in the field
- Working with local officials (and federal and/or tribal, if involved)
- Potential hazards
- Other topics deemed pertinent to the situation

Normally, this briefing will be conducted at the SEOC in Lansing or at another location as designated by the Team Leader and/or the MSP/EMHSD Command Staff. In some situations, the initial briefing will be conducted at or near the incident scene. In rare cases, the briefing will be conducted over the telephone as part of the initial contact; by facsimile or e-mail; or by MI CIMS and/or web site post or webinar. The Team Leader will determine the most appropriate method for disseminating pre-deployment information based on situational needs.

LOGISTICS AND FINANCE

Travel Arrangements. Ideally, team representatives will travel together to and from the incident scene; however, that may not always be possible. In most circumstances, travel will be by state-owned motor vehicle, although in some cases it may be necessary to travel by state or commercial aircraft and then pick up a vehicle at the destination airport through a nearby State Police Post or other state facility. The MSP/EMHSD will handle travel arrangements.

Overnight Accommodations. Normally, the MRIAT will not be in the field for more than 48 hours, although in extremely severe or widespread events more time may be required to complete the necessary assessments. The MSP/EMHSD will make any necessary overnight accommodations. If possible, overnight accommodations will be in the affected area unless a lack of adequate accommodations and/or safety concerns dictate otherwise. If adequate accommodations cannot be found in the affected area, lodging will be sought in those communities immediately adjacent to the impacted area to cut down on transportation time and expenses. Every attempt will be made to house team members at the same hotel / motel or at adjacent facilities. If possible, arrangements will be made to have the room expenses direct-billed to each respective agency. (Note: In some cases, direct billing may not be possible and individual team representatives will have to pay for their room out-of-pocket and then be reimbursed.) Meals and other miscellaneous expenses will be paid out-of-pocket and later reimbursed in accordance with standard Department of Technology, Management and Budget procedures and guidelines.

Field Supplies. The MSP/EMHSD will provide appropriate maps and other basic supplies for conducting assessments. The Team Leader will have the necessary computing equipment and Global Positioning System (GPS) equipment to collect and compile assessment data and produce a report. Microsoft Office software (Word, Access, Excel) will be used. Team representatives must provide their own foul weather gear (winter coats, gloves, boots, umbrellas, rain ponchos, etc.) and any function-specific specialized equipment or supplies needed (e.g., technical manuals, electronic detection equipment, etc.). The MSP/EMHSD will supply each team representative with a lightweight jacket to wear (if so desired) while in the field. These jackets have "State Damage Assessment Team" or similar printed on the back and help provide identity in the field. Hard hats are also available for use as required.

If the team must conduct assessment operations in a post-WMD attack environment, the MSP/EMHSD will supply team members with appropriate personal protective equipment (PPE) consistent with the conditions to be encountered. Currently, the team is capable of operating in an environment that requires up to Level C protection. (Refer to the "Assessment Protocols for Weapon of Mass Destruction Attacks" section found on pages 13-18.)

Weather and Ground Conditions. Team representatives should be prepared to conduct assessments in all types of weather and ground conditions. The only exceptions would be dangerous conditions that could place team representatives in jeopardy, such as lightning, deep or rapidly moving floodwaters, severe cold weather, downed power lines, risk of explosion, etc. The Team Leader will carefully assess the weather and ground conditions before field assessments commence. Team representatives will be expected to follow the recommendations made by the Team Leader with regard to safety while conducting field assessments. The guidance found in the "Assessment Protocols for Weapon of Mass Destruction Attacks" section should be followed when conducting assessment operations in a post-WMD attack environment.

TRAINING AND CERTIFICATION

Team representatives are expected to attend MRIAT training sessions when offered. In addition to the traditional classroom training and field exercises, MRIAT guidance materials are available in electronic (CD) and hardcopy formats for viewing at times that are convenient to team representatives. Classroom style refresher training (approximately 2-3 hours in length) will be scheduled for delivery as needed and as circumstances allow. Field exercises will be scheduled periodically and may be held in conjunction with or as part of a larger disaster drill or exercise. Team representatives completing each training session will receive a certificate of completion. Training registration and recordkeeping may be facilitated through the "MI TRAIN" web portal.

Team representatives are encouraged to attend other MSP/EMHSD emergency management training courses (including MI CIMS training) to broaden their understanding of emergency management activities in Michigan. Training is available in Lansing and periodically at other locations across the state. All courses are free (with the exception of some hazardous material training courses which have a modest fee). Course listings will be provided at MRIAT training sessions. In addition, copies are available for viewing and downloading on the MSP/EMHSD web site (www.michigan.gov/emhsd).

ASSIGNMENTS AND RESPONSIBILITIES

Following is a list of specific team assignments and a checklist of the major responsibilities that go with each assignment. (Note: The responsibilities listed under each assignment are not all-inclusive; additional responsibilities may have to be addressed based on the situational circumstances. The Team Leader will determine those additional responsibilities and discuss them at the pre-deployment briefing.)

Team Leader (MSP/EMHSD District Coordinator from affected area or assigned from adjacent area)

1. Provide initial contact and liaison with officials from the affected local jurisdiction or tribal government. Jointly conduct an initial assessment and overview of the situation. Ensure that an incident is created via the MI CIMS Incident Creation board, if not already done.

2. Jointly determine (with local and/or tribal officials) the need for activating the MRIAT to assist in assessing the damage and impacts caused by the disaster or emergency. Communicate the request for activation to MSP/EMHSD Command Staff.

3. If the decision is made by the MSP/EMHSD to activate the MRIAT, consult with MSP/EMHSD Command Staff to reach decision on the following basic issues:

    - Location of and topics for the pre-deployment briefing
    - Team size and makeup, based on discussions with local / tribal officials and perceived situational needs
    - Areas to be surveyed, in priority order
    - Assessment priorities (types of damages / impacts to look for and focus on)
    - Logistical / financial concerns, including travel, lodging, meals, needed supplies, billing and reimbursement, etc.
    - Team assignments and schedules, based on available personnel and situational needs
    - Supplies needed to conduct assessments
    - Special hazards or concerns in the affected area
    - Work location in the affected area (e.g., local EOC, State Command Post, hotel room, other?)
    - Other topics or issues deemed pertinent to the situation

4. Based on the above discussion with MSP/EMHSD Command Staff, conduct a pre-deployment briefing with team representatives.

5. Upon arrival in the affected area, set up temporary quarters in the designated work location.

6. Contact local / tribal officials to obtain an update on conditions and to establish times for conducting assessments.

7. Review assignments and work schedules with team representatives and establish (as appropriate) meeting and/or reporting times and locations.

8. If applicable, work with the Computer / GIS Specialist to ensure consistency of information collection and processing procedures.

9. Maintain regular contact with MSP/EMHSD Command Staff.

10. At the end of each day, assemble the team for a debriefing session. Determine problems encountered during the assessment process and work with team representatives to resolve those problems.

11. If appropriate, work with local / tribal officials to disseminate information to the media on team activities and preliminary findings. (Note: In those situations where a state "presence" is important, this responsibility should be made a priority.)

12. After the assessments have been completed, work with team representatives and local / tribal officials to reconcile information and conclusions. Prepare a final report as quickly as possible and send it via e-mail, facsimile, or MI CIMS message to MSP/EMHSD Command Staff, and provide a copy to local / tribal officials.

13. Collect any MSP/EMHSD equipment used (e.g., computers, mobile devices, digital cameras, GPS units, maps, jackets, hardhats, calculators, etc.) and communicate replenishment needs to MSP/EMHSD Command Staff.

State Public Assistance Officer (from the MSP/EMHSD)

1. Coordinate the public facility damage assessments (Part II, Categories A-G of the MI CIMS Damage Assessment Board). Ensure that the right type of damage is being assessed, and that it is being assessed properly, using Public Assistance Grant Program (PAGP) guidelines as the general rule.

2. Ensure that potential mitigation measures and opportunities are considered for each damaged or impacted public structure or facility. Communicate findings to the State Hazard Mitigation Officer (SHMO).

3. Ensure that damaged private nonprofit facilities are assessed (Part II, Category G of the MI CIMS Damage Assessment Board).

4. Ensure that damage and impacts are examined for each affected public and private nonprofit facility. (Impacts are equally as important as the damage numbers and dollar figures.)

5. Ensure that photographs are taken of facilities as they are assessed, showing appropriate aspects of the damage. Video footage is also acceptable.

6. Ensure that costs for emergency measures taken by local communities (Part II, Category B of the MI CIMS Damage Assessment Board) are considered in the assessment process.

State Hazard Mitigation Officer (from the MSP/EMHSD)

1. Work with the State Public Assistance Officer to ensure that potential mitigation measures and opportunities are identified and examined as part of the public / private nonprofit facility assessments.

2. Work with the State Individual Assistance Officer (SIAO) to ensure that individual mitigation measures and opportunities are identified and examined as part of the assessment of damage and impact on people and businesses, with emphasis on widespread, common, or broad-based problems that have affected a large number of households and structures.

3. Carefully examine the public and private damage to find common trends and causative conditions. Determine mitigation measures and approaches that might be applicable to the conditions.

4. As appropriate, take photographs and/or video footage of structures or areas that could potentially be the focus of mitigation efforts.

State Individual Assistance Officer (from the MSP/EMHSD)

1. Work closely with local officials to assess the various impacts on people (as specified on the MI CIMS EM Program Status and Damage Assessment boards). Determine the unmet needs of the population, and possible resources that could be mobilized to meet those needs.

2. Work closely with local / tribal officials, the Chamber of Commerce, and area business associations to assess damage and impacts to businesses in the community (as specified on the MI CIMS EM Program Status and Damage Assessment boards). Determine how many people may be unemployed as a result of the disaster or emergency, and what effect this might have on the community in terms of lost income, lost tax base, disruption to community services, etc.

3. As appropriate, take photographs and/or video footage of damaged / impacted homes and businesses for inclusion in the final report and possible Governor's letter of request for a federal Stafford Act declaration.

Computer / Geographic Information System (GIS) Specialist (from the MSP/EMHSD)

1. Coordinate electronic information collection and processing activities, including (where appropriate) geospatial locational data (latitude and longitude coordinates). Ensure consistency of information collection procedures and compatibility of software, report forms, etc.

2. Set up computer station(s) and wireless or network access in the team's designated work location.

3. Assist in field information collection and compilation, MI CIMS connectivity, and production of the final report.

4. Serve as troubleshooter for any computer / technology problems encountered in the field.

State Agency Representatives

1. Conduct assessments for assigned subject area (e.g., public facilities and infrastructure, private homes and businesses, agriculture, public health, schools, the environment, etc.). Whenever possible, quantify damage and/or impacts and collect geospatial coordinates for damaged areas.

2. Determine potential future problems (both long- and short-term), identify immediate and long-term resource needs, and suggest possible resources for helping meet those needs.

3. Determine potential state role or involvement in response and recovery activities related to specific subject area.

4. As appropriate, take photographs and/or video footage of damaged / impacted areas and structures for inclusion in the final report and possible Governor's letter of request for a federal Stafford Act declaration.

5. Provide field assessments to Computer / GIS Specialists for compilation, and production of the final report.

6. Discuss any areas or conditions of immediate concern with the Team Leader to ensure the issue receives priority attention.

FIELD OPERATIONS

The Team Leader will determine an assessment methodology after consultation with local and/or tribal officials, MSP/EMHSD Command Staff, and other involved parties. Several factors will enter into this decision, including the size and nature of the event, the team size, weather and ground conditions, the urgency of the assessment, and the availability of accommodations within the affected area, to name just a few. The following general guidelines will be used to help determine how field assessments will be carried out:

Multi-Jurisdiction Situations. For those events that have impacted multiple jurisdictions, the team will normally be split up into smaller, subject-specific assessment units. The assessment units will then meet back at the designated work location at the end of the day to compile and synthesize information collected, compare and review findings, and discuss common problems encountered. The Team Leader may accompany one of the units in the field and assist with assessment activities; may opt to "float" among several units throughout the day; or may stay back in the designated work location and coordinate activities from that point.

Single Jurisdiction Situations. The team will normally assess single jurisdiction events as an intact unit – moving from area to area together with each representative assessing damage and impact within their individual area of expertise. This method has advantages in that each subject matter expert has the opportunity to discuss the damage and impact with other team representatives and get their perspective on the situation. The Team Leader and local / tribal representative will help keep the team moving from location to location as quickly as possible, making sure that too much time is not spent at any one site or area.

Communications. The Team Leader will determine the communication methods the team will use. Telephone or radio will be the typical means of communication. The Team Leader will make necessary arrangements with MSP/EMHSD Command Staff and team representatives for appropriate communications equipment. In addition, the local jurisdiction may be able to assist in facilitating communication between team members utilizing local communications assets.

Assessment Protocols for Weapon of Mass Destruction (WMD) Attacks. A prompt and comprehensive assessment at the scene of a WMD attack is necessary to protect the health, safety, and welfare of emergency responders and the general public. When planning and conducting assessment operations in a WMD environment, assessment personnel should consider these factors:

- A variety of public safety, health and environmental hazards and risks may be present at suspected, threatened and actual sites of terrorist attacks
- The hazards at the scene may not be apparent to emergency responders
- The hazards may pose significant short- and long-term health, environmental, physical, and economic consequences both on-site and off-site
- The assessment process will involve the gathering of pertinent information through observation, investigation, and the use and application of technical knowledge and resources

Role in a WMD Attack. Depending on situational circumstances, the team could be called upon to provide early assistance in assessing the nature, scope, magnitude, and extent of damage and impacts of a WMD attack. While the team does not have the expertise or equipment to identify particular agents that might be used in a WMD attack, it could help determine actual / potential damage and impacts once the appropriate response elements (e.g., biological laboratories, hazardous material teams, regional response teams, etc.) identify the agent involved and the scene is stabilized. (Specialized federal response and support assets are available to assist local and state agencies in identifying the particular type of agent used in a WMD attack. Refer to the WMD Attack Procedures in the Michigan Emergency Management Plan – MSP/EMHSD Publication 101 – for a listing of these federal resources.)

In the event of a WMD terrorist attack where there are mass casualties and/or where significant property damage has occurred, the team will conduct assessment operations with the assistance of the technical experts from various state and federal agencies as described above. The team and the state / federal support elements will conduct appropriate sampling and monitoring operations to ensure public (and responder) safety and to address on- and off-site environmental concerns. The WMD attack assessment process will generally consist of these six components:

- Identification of airborne substances (e.g., toxic, corrosive, asphyxiant) that may be immediately dangerous to the life and health (IDLH) of emergency responders and/or the public
- Identification of any other hazards in the area that could endanger emergency responders and/or the public (e.g., structural hazards, potential explosives, flammable materials, etc.)
- Potential or actual off-site consequences of the identified hazard(s)
- Environmental characteristics of the site (e.g., geography, topography, meteorology, development patterns, etc.) that may impact response and recovery operations and/or the safety of the public
- Identification of facilities, infrastructures, critical systems, community groups, essential services, etc. that may be (or have been) affected and the level of damage / impacts
- Information that may assist in identifying the type of tactics, hazards, and risks confronting responders and those involved in recovery operations

Reporting. Damage assessment information will be reported to the MSP/EMHSD using the MI CIMS EM Program Status and Damage Assessment boards, as described earlier in this document. However, for security reasons the MSP/EMHSD may require that damage assessment reports for WMD attacks be submitted via the LEIN or other secure means. (The MSP/EMHSD will provide guidance regarding secure submittal of information as needed.)

Self-Protection in a WMD Attack. The team would not normally be considered a "first responder" at the scene of a WMD attack and therefore would not enter affected areas until the scene has been stabilized. However, even with a secondary response role the team will likely operate in potentially hazardous conditions which may include dust, dirt, hazardous / contaminated debris, smoke, and possibly the residual effects of the WMD agent employed in the attack. For that reason, it is essential that adequate self-protection measures be taken to protect all members of the team while conducting assessment operations.

Basic self-protection measures taken at a WMD attack would be similar to those used at any other hazardous material incident and involve **time, distance, shielding, and decontamination:**

Time. Time as a self-protection action simply refers to minimizing the amount of time spent in the hazard area. Entries into the hazard area for assessment purposes should be done in a rapid, organized manner to minimize the duration of exposure. Less time spent in the hazard area reduces the chance for injury or illness. It is difficult to suggest a universal time limit for assessment activities at a WMD attack scene because each incident has unique circumstances. However, the Incident (Unified) Command should establish guidelines for duration of assessment operations within the hazard area and those guidelines must be strictly followed by all assessment personnel. Minimizing time in the hazard area also helps preserve criminal evidence.

Distance. As with hazardous material incidents, first responders must maintain a safe distance from the hazard area unless they have been authorized to enter the area and have employed appropriate protection measures. The Incident (Unified) Command will provide guidance to assessment teams regarding safe distances from the incident scene. If potentially hazardous conditions still exist at the incident scene at the time of assessment operations, it may be necessary for assessment activities to be conducted remotely with the aid of binoculars or other enhanced viewing devices, or they may have to be conducted at a later time when the scene has stabilized.

Shielding. Assessment teams must use appropriate shielding to protect against the hazards that might be present at the incident scene. The Incident (Unified) Command will determine the appropriate level of shielding that must be employed by assessment personnel based on the hazards present. In general, shielding may consist of buildings and vehicles as well as personal protective equipment (PPE) such as chemical protective clothing.

Decontamination. Assessment personnel exposed to potentially hazardous substances at the WMD attack scene must employ immediate and effective decontamination measures to minimize the effects of the substances and to prevent their spread from the hazard area. Decontamination must be considered and planned for prior to entering the hazard area. The Incident (Unified) Command will establish decontamination procedures for all persons working in the hazard area. Decontamination procedures will be determined based on the substances present at the scene, the duration of exposure and the type of personal protection employed. In general, decontamination will consist of the following steps:

- Washing with water
- Removing and properly disposing of contaminated clothing
- Flushing with water again (if needed)
- Exposure to some chemical or biological agents may require more extensive decontamination at the scene

WMD Attack Hazards. Terrorist WMD attacks may involve one or more of several types of agents / devices, each creating its own set of unique problems which must be addressed with distinct tactical considerations and response procedures. These include:

- Biological agents
- Nuclear / radiological devices
- Incendiary devices
- Chemical agents
- Explosive devices

Biological Agents. Biological agents are divided into three types – bacteria and rickettsia, viruses, and toxins. Toxins are strong poisons produced by living organisms, while bacteria, rickettsia and viruses are disease causing organisms. Biological agents can be dispersed by aerosol means (through the air), by oral dissemination (through food, water, etc.), or dermal exposure (through direct contact or injection). Although various biological agents cause different symptoms in humans, some of the more common ones include itchy skin, fever, shortness of breath, bloody sputum, headaches, rash, diarrhea, gastric bleeding, lesions, fatigue, cyanosis, chills, brain inflammation, vomiting, paralysis and pulmonary congestion.

Nuclear / Radiological Devices. Nuclear / radiological terrorism could be carried out in one of three ways. The first is by detonating a device such as an atomic bomb (nuclear fission), although this method is less likely due to the complexities involved in building such a bomb and the tight security surrounding existing nuclear devices. The second and more likely possibility involves the packing of radiological material around a conventional explosive device. When the device is detonated, the radiological material is dispersed into the air, contaminating everything it comes in contact with. This device is commonly referred to as a "dirty bomb." The third method requires the detonation of a large explosive device in close proximity to a target containing large quantities of radiological material such as a nuclear power plant or nuclear research facility.

Incendiary Devices. Incendiary devices utilize fire to cause extensive physical damage, injury and loss of life. They may be triggered by either chemical reaction or electronic / mechanical ignition and delivered as a stationary device, hand thrown, or self-propelled. Incendiary devices require an ignition source, a filler material that is combustible, and a container to hold the filler. Many common materials can be used to construct these devices including flares, light bulbs, household chemicals, compressed gas cylinders, electrical devices, gasoline, matches, fireworks, plastic pipe and bottles / cans.

Chemical Agents. Chemical agents can be used by terrorists to cause significant numbers of injuries and deaths through a variety of means. These materials are classified by the military as nerve agents, blister agents (vesicants), blood agents, choking agents, and irritants (riot control). Although many of these agents cause common symptoms such as difficulty breathing or vomiting, each also attacks the body in a different manner:

- **Nerve agents** attack the central nervous system and are very toxic in both liquid and vapor states. Death can result within minutes.
- **Blister agents (vesicants)** primarily affect the eyes, airway and skin, although absorption of these materials can affect other body systems as well. Victims may indicate a prominent garlic odor.
- **Blood agents (cyanides)** can result in seizures, respiratory arrest, and cardiac arrest. These substances have the same effect as asphyxiation, but more sudden.
- **Choking agents** cause airway irritation, dyspnea (difficulty breathing), tightness in the chest and pulmonary edema after inhalation of vapors.
- **Irritants** are used for riot and crowd control as well as individual incapacitation and cause temporary pain, burning, discomfort on exposed skin and mucous membranes.

Explosive Devices. Explosives are the most commonly deployed terrorist WMD (involved in 70% of terrorist incidents) and may be used to disperse chemical, biological, incendiary, and nuclear / radiological agents as well as cause widespread physical destruction. The primary effects of explosives include blast pressure, fragmentation and thermal impacts. Common explosive devices include pipe bombs (generally small and providing limited destruction), satchel bombs (which consist of nails, glass, etc. packed along with explosives inside a bag or satchel), and vehicle bombs (large, powerful devices that are detonated remotely or by timer). Other types of homemade or improvised explosive devices may include grenades, land mines, and projectiles. A major concern when responding to a terrorist WMD attack involving explosives is to ensure that no unexploded or secondary devices are in the area. Terrorists often use multiple bombs to target responders when they arrive at the scene.

Protective Equipment Needs. In almost every WMD attack scenario, it is a safe assumption that assessment teams will need some level of personal protective equipment (PPE) in order to conduct assessment field operations. This PPE may range from nothing more than a dust mask and coveralls (Level D protection) up to a basic level of chemical protective clothing with mask and respirator (Level C protection). (Note: Level A and B PPE require specialized training and certification as well as fit testing in order to be properly used. Most assessment operations, however, can be conducted with a minimal level of PPE equivalent to Level C or D protection.) The type and level of PPE required is entirely dependent upon the situational circumstances and conditions at the time the assessment operation is being conducted. The Incident (Unified) Command will determine the type and level of protection required in order to safely conduct field assessments. The Team Leader will communicate that decision to the team members prior to field deployment.

The MRIAT has sufficient PPE to outfit the number of personnel that will likely be required to conduct assessment activities in a post-WMD attack scenario. Although it is difficult to determine exact equipment needs because of the myriad scenarios that could occur, at a minimum the team will have basic chemical resistant protective suits (splash suits) or protective coveralls, dust masks, hard hats and rubber gloves and boots for each team member, along with sufficient quantities of duct tape or equivalent for sealing the suits.

Other Equipment Needs. In addition to the basic PPE required to conduct post-attack assessment operations, the team will also have available sufficient quantities of the following items in its equipment cache:

- Plastic bags of various sizes (freezer, garbage, etc.) for securing personal items and clothing of team members, for removal of PPE during the decontamination process, and for protecting cameras and other devices while in the field
- Disposable cameras to photographically document damage, field operations, and potential criminal evidence
- Several large bottles of water for drinking and for small-scale decontamination
- Binoculars (small and inexpensive) to view damaged areas from a distance, if required
- Disposable clipboards, pens, pencils, notepads, etc. for recording information while in the field
- Wire flags or plastic flagging tape for marking potential criminal evidence or other significant items / locations

WMD Training. At a minimum, team representatives should have attended the "Terrorism Awareness: First Responder" or equivalent course offered by the MSP/EMHSD, or received an expedient version of the same course prior to being deployed into the field. Team representatives should also have attended the "Damage Assessment Workshop" or equivalent course offered by the MSP/EMHSD and/or be very familiar with local and state damage assessment procedures. A highly trained assessment team is much more likely to conduct assessment operations in a safe, efficient, and effective manner – highly desirable when working in a post-WMD attack environment. Poorly trained individuals are much more likely to make mistakes in the field or unnecessarily prolong the assessment operation, possibly endangering themselves and others in the process.

Field Operations. The assessment operation will begin at the Incident (Unified) Command Post, staging area, or other designated location where incident-specific information and instructions can be given by the Incident Commander or his/her designee (and the Team Leader), and the team can properly suit up in PPE and ready its field survey equipment. In general, the smallest possible team will be used to conduct the field assessments – especially if hazardous conditions exist – and assessments will be conducted in the most expedient manner allowable given incident circumstances.

Depending upon the incident circumstances, field assessment operations will be conducted from one of three incident management "zones." The "hot zone" includes the immediate incident scene and is the location where the most hazardous substances are likely to be located. Because of the specialized knowledge, training, and equipment required to operate in this environment, it is unlikely that assessment activities would be allowed within this hazardous area unless the team is trained and equipped to a very high protection level (Level A or B) – which it currently is not. The "warm zone" is the area immediately adjacent to the "hot zone" and is used as a buffer between the hazardous area and the areas not directly affected (the "cold zone"). The warm zone is the location where safe entry and exit is made from the hot zone, and where decontamination operations occur (see "Decontamination Process" section on the following page). If assessment operations are conducted from the warm zone then team representatives will have to wear PPE and be decontaminated at the conclusion of the operation. Assessment operations conducted from the cold zone will not require special precautions for personnel or equipment.

For hot or warm zone operations, disposable cameras, binoculars and other hand-held equipment will be placed in protective clear plastic bags (freezer bag or equivalent) and properly sealed for use in the field. This will protect the equipment from contamination but still allow it to be used. (Any equipment not protected in this manner will have to be decontaminated using soap and water – which would ruin many items.) Disposable clipboards, pens / pencils, notepads, etc. that cannot be sealed in plastic must be used unprotected but then will normally be discarded at the end of the assessment operation as part of the decontamination process.

Field survey information can be recorded on the Damage Survey Worksheets (found on pages 29-31), damage maps (page 28), and MI CIMS EM Program Status board and Damage Assessment board. Photographs of damaged / impacted areas should be taken in accordance with the "Guidelines for Disaster Photography" found on pages 37-40.

Evidence Preservation. Team representatives should take special care when conducting field assessments, making sure that the incident scene is not disturbed any more than absolutely necessary. It is possible that the team may discover additional criminal evidence that may aid in the identification and capture of the terrorists responsible for the attack. It is also possible that secondary / undetonated explosive devices may be uncovered as team representatives traverse the incident scene. Remember, even the most ordinary looking item may turn out to be evidence or an explosive device. In all cases, any item thought to be potential criminal evidence or an explosive device should be left alone but flagged / marked and photographed as is for appropriate follow up action by authorized law enforcement officials. DO NOT ATTEMPT TO TOUCH OR MOVE THE ITEM – EVEN FOR MARKING AND PHOTOGRAPHIC PURPOSES! When in doubt, leave it alone, mark / photograph it, and immediately notify the Team Leader and appropriate law enforcement officials through the Incident Command Post or other designated location.

Decontamination Process. Once the field assessment operation has been completed, it may be necessary to go through a decontamination process if hazardous substances were present at the locations where field assessments were conducted. This will help minimize the effects of the substances and prevent their spread from the hazard area. A designated decontamination area will normally be established in proximity to the incident scene to allow for the decontamination of all persons and items that went into the hazard area. The decontamination area is generally located in the area known as the warm zone which is between the hot zone (the contaminated incident scene) and the cold zone (the secure area where no special precautions are required). Assessment operations conducted in the hot or warm zone will require decontamination of persons and equipment; those conducted in the cold zone will not.

The decontamination process is dictated by the agent(s) employed in the attack and the hazardous substances present at the incident scene. Generally, decontamination is accomplished by thoroughly washing down the team representative and any unprotected equipment with water, having the team representative remove all PPE (with the assistance of another properly outfitted team representative) and place it in a plastic bag for proper sealing and disposal. Cameras, binoculars, etc. that were properly sealed in plastic bags can simply be removed and the protective bag discarded along with the PPE. Any paperwork, clipboards, pens / pencils, etc. used to record field observations will have to be discarded as well. The paperwork can be placed in a clean, clear plastic bag, properly sealed, and then photocopied to maintain a permanent record. Once photocopied, the original paperwork and the plastic bag must then be properly discarded. Any vehicles or other large equipment that were involved in the assessment operation must also be decontaminated by properly washing with water.

Post-Operation Debrief. Once the incident response has been completed – including assessment operations – a debriefing session will normally be held shortly thereafter to allow all involved participants to compare notes regarding what transpired, to receive any information that might be required regarding potential medical or health issues, and to bring closure to the incident. Approximately a few days to one week after the post-operation debrief, a follow up response critique is also normally held to evaluate what went wrong and right with the incident response, to more closely examine the "lessons learned," and to formulate any after-action adjustments that might be required in the areas of training, plans / procedures, equipment, or intra- / inter-agency coordination. As required, the Team Leader (and in some cases the individual team representatives) will attend these meetings to convey the relevant findings of the team with regard to the assessment operations.

INFORMATION COLLECTION, COMPILATION, ANALYSIS, SYNTHESIS, AND REPORTING

Unless the Team Leader indicates otherwise, the following general procedures will be followed pertaining to information collection, compilation, analysis, synthesis, and reporting:

Information Collection. Information must be collected in accordance with the basic functional categories outlined on the MI CIMS EM Program Status and Damage Assessment boards used by local governments to report detailed damage and impact assessments. (Refer to the Michigan Damage Assessment Handbook.)

Narrative Impact Assessments. Detailed narrative descriptions of the following specific subject areas will be recorded in the MI CIMS EM Program Status and Damage Assessment boards:

- Unresolved and/or emerging public health and/or public safety threats
- Impacts on essential public services and facilities
- Major road and bridge closures
- Impacts on specific community groups (e.g., the elderly, young children, non-English speaking, the homeless, etc.)
- Cities, townships, and villages affected
- Socio-economic impacts
- Other pertinent impacts (e.g., environmental, historical, political, psychological, etc.)

Damage Surveys. Damage to individual homes, businesses, and public facilities and infrastructure must be documented on the Damage Survey Worksheet (see examples and blank template found on pages 29-31). Guidance related to the Damage Survey Worksheet can be found on pages 21-27, and on the Worksheet itself.

Geospatial Data Collection. Wherever possible, geospatial coordinates (latitude and longitude) should be collected (in addition to the street address) for each damaged structure / facility (or clusters of damaged structures / facilities, as appropriate). This will assist the MSP/EMHSD in mapping the damaged areas using a GIS in the SEOC. For some public facility sites (e.g., drains, bridges, culverts, etc.), it will not be possible to include a street address so the geospatial coordinates will be the only method to accurately locate the damaged sites.

In general, geospatial data should be collected in the following manner:

- The standard datum of GPS latitude / longitude collection is the North American Datum of 1983 (NAD-83) or the World Geodetic System of 1984 (WGS-84) of the U.S. Defense Mapping Agency. Coordinates ideally will be in decimal degrees longitude and latitude with at least 6 decimal places for property locations and include a minus (-) to show west longitude or south latitude. For example: latitude 36.999221 longitude-109.044883. However, in many instances it will not be feasible to collect and report data in this manner. Therefore, it is acceptable to record the coordinates in the standard format of degrees, minutes and seconds. For example: latitude 36°42'36 longitude 085° 81'18. The MSP/EMHSD can convert coordinates in this format to decimal format for database and map production purposes. It is also possible on many GPS units to simply enter the location as a "waypoint" and the coordinates can then be automatically downloaded from the GPS unit to the MSP/EMHSD's GIS for database and map production.

- Geospatial coordinates (latitude and longitude) should be taken from one of the following places, listed in order of preference:

  - The front door of the structure
  - The center of the beginning of the driveway, road, or access way that is used to access the property
  - From the westernmost or easternmost point of the property closest to the road or access way (either the SW, SE, NW or NE corner of the property). This specifically applies to areas / facilities / structures where actual addresses and easily recognizable property divisions may not exist.

Although collection of geospatial data is important to the State's assessment, response and recovery efforts, it is also important to remember that the actual assessment of the damaged facility is the ultimate purpose of the MRIAT's activities. Therefore, keeping geospatial data collection as simple as possible is important to keeping the assessment operations on track and on time. It can be very easy to get wrapped up in the intricacies of the process and ultimately forget the intended purpose of the assessment effort. Geospatial data collection is an important part of the process and helps ensure an accurate geographic portrayal of the damage; however, the actual assessment of the damage should remain the focus of the assessment effort.

Information Compilation, Analysis, and Synthesis. Once all damage surveys have been completed, the individual Damage Survey Worksheets will be tallied and the results will be recorded in the pertinent sections of the MI CIMS Damage Assessment board. The impact assessment information recorded in Part IV of the Damage Assessment board section will be summarized and "cleaned up" as needed.

When compiling information, team representatives should look for common trends or conditions encountered. For example, if 75% of the impacted homes received roof damage, there may be an immediate need for large quantities of poly film or tarps to keep rainwater, snow, debris, and animals out of the homes and to prevent further damage. If local suppliers cannot provide for all the local needs, state assistance may be required to supplement local efforts.

These types of situations may not be readily apparent when conducting field assessments; however, when the information is compiled, analyzed, and synthesized, the trends or conditions become obvious.

Final Report. The Team Leader will coordinate the development of the team's final report and ensure that it is transmitted as quickly as possible to the MSP/EMHSD Command Staff and affected local officials. The final report will consist of information compiled and summarized on the Damage Survey Worksheets and MI CIMS EM Program Status and Damage Assessment boards, along with appropriate supporting documentation such as photographs, video footage, newspaper articles, technical background information, etc. The affected jurisdiction will submit the "official" final report (which will contain the team's information plus whatever additional information the jurisdiction might want to add) electronically via MI CIMS per the standard procedure outlined in MSP/EMHSD Publication 901. (Note: If the MI CIMS is inoperable or otherwise unavailable, alternate submittal methods are specified in MSP/EMHSD Publication 901.)

FORMS / GUIDANCE*

*Refer to MSP/EMHSD Publication 901, Michigan Damage Assessment Handbook, for the complete set of forms, formats, and guidance related to the damage assessment function within the MI CIMS. To avoid duplication, only the forms (with relevant examples) and guidance that would actually be used in the field by the team to collect, record, and compile information are shown on the following pages. The various MI CIMS forms and formats (along with non-MI CIMS back-up methods) that would be used by the team to report team findings are described in considerable detail in the Michigan Damage Assessment Handbook.

DAMAGE SURVEY WORKSHEET AND MAPPING INSTRUCTIONS

The damage survey worksheet (see examples and blank template found on pages 29-31) will assist on-site inspection teams in documenting damage to homes, businesses, and non-profit organizations (private damage), and public facilities (public damage). By using this worksheet, an accurate house-by-house, business-by-business, facility-by-facility, etc. survey can be completed in the shortest time possible. Each street, block, section, etc., (depending on how the surveys are conducted) should be recorded on a separate worksheet. **NOTE: SEPARATE WORKSHEETS SHOULD BE USED FOR PUBLIC AND PRIVATE DAMAGE.**

Mapping Private Damage. Damaged areas should be outlined on one or more maps (ideally one for private damage and one for public damage) and classified according to the predominant level of damage encountered. A common damage classification system is provided on pages 22-27. For example, if an on-site inspection team surveys a four square block area and, upon reviewing their completed worksheets, finds that 75% of the homes and businesses surveyed received major damage (category 2 in the classification system), then the area surveyed should be outlined on the map and assigned a "2;" if the majority of homes and businesses surveyed had received only minor damage (category 1 in the classification system), then a "1" would be assigned to that area, and so on. The number of damaged homes / businesses should be indicated (in parenthesis) in each outlined area. See the sample map on page 28.

Mapping Public Damage. For public facilities, this system works in the same manner. Damaged public facilities are classified on the damage survey worksheet using the same classification system. In addition, a damage cost estimate also should be entered in the "Description of Damage" column on the right side of the worksheet. This damage estimate will only be a "ballpark" number, since there normally isn't time to develop the highly-detailed labor and material estimates necessary for a more accurate cost figure. On the public damage map, a short description of the damage (e.g., 50 ft. section of roadbed collapsed; road impassable) should be entered next to the damaged facility, in addition to the damage classification (e.g., major damage, or "2").

Facilitating the Preliminary Damage Assessment. Classifying and mapping damage in this way makes it easier for Preliminary Damage Assessment (PDA) teams to prioritize damage and complete their necessary damage surveys in the shortest time possible. It also helps ensure that the most serious damage is surveyed first by these teams so that assistance can be targeted where it is needed most. In addition, it also assists federal and state authorities in developing appropriate response and recovery strategies, and in determining the type and amount of assistance required.

Information Submittal. Copies* of the completed damage survey worksheets, along with the map(s) with damaged areas outlined and classified and any photography taken of the damaged facilities / areas, should be submitted to the local EOC Planning Section for MI CIMS entry. The local EOC Planning Section will enter this information in the appropriate fields of the MI CIMS Incident Creation board, EM Program Status board, and Damage Assessment board; attach one or more damage maps and any applicable photography (hardcopy maps and photographs must be scanned and attached) to the Damage Assessment board; and submit the report to the SEOC and the appropriate MSP/EMHSD District Coordinator within the specified three (3) day time period. **IT IS NOT NECESSARY FOR THE LOCAL JURISDICTION TO SUBMIT DAMAGE SURVEY WORKSHEETS TO THE MSP/EMHSD. THEY SHOULD BE RETAINED LOCALLY FOR PERMANENT RECORDKEEPING AND FOR USE IN A PDA, IF ONE IS CONDUCTED.**

***Note:** The MRIAT Team Leader will retain hardcopies of all materials produced by the team and provide these items, in a packet, to the SEOC Planning Section Chief for permanent recordkeeping within the MI CIMS and in hardcopy files.

Back-up Submittal Instructions. If the MI CIMS is not operable or available / accessible, the back-up submittal methods (e-mail, facsimile, or LEIN) prescribed in MSP/EMHSD Publication 901 (Michigan Damage Assessment Handbook) must be followed.

Damage Survey Considerations: Degree of Damage Categories

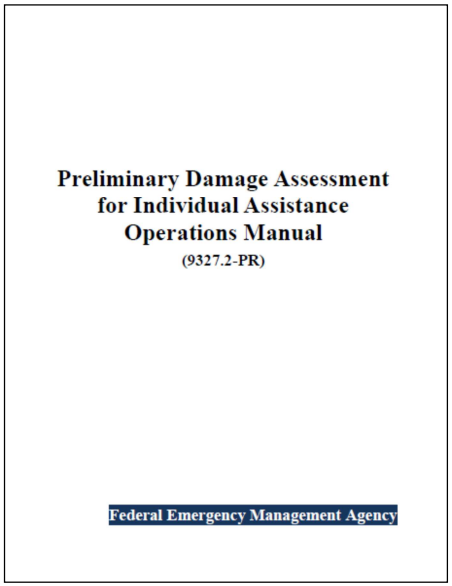
The degree of damage categories on the following pages are consistent with FEMA PDA for Individual Assistance (IA) guidelines (with one exception – see note in description box under "AFFECTED") and should be used for classifying private and public damage in Michigan.

Important Background Notes: 1) In this classification system, damage is expressed as a percentage of structure replacement value. 2) Although the examples provided are for damage to homes and businesses (private damage), the same guidelines can be applied to public facilities and structures.

FEMA Damage Survey Guidelines for Basements. FEMA has specific guidelines for PDA team members with regard to basements when considering the degree of damage to a structure during the PDA process. These guidelines – included on the following page **verbatim** from pages 25-26 of the July 2012 *FEMA PDA for IA Operations Manual* (see cover shot below) – have been appropriately incorporated into the four degree of damage categories.

FEMA wrote: "When assessing the damage to a home, consideration must be given when the home has a basement. For a home with a basement, several variables would need to be identified in order to estimate the degree of damage to the home. Some variables would include: water depth in relation to utilities, structural damage to walls, and foundation and support structures. It is also important to note the uses of the basement, when possible, because FEMA only provides assistance for rooms required for occupation of the dwelling (i.e., occupied bedrooms, bathrooms required for occupied bedrooms, a sole kitchen or living room, or when no other room in another part of the dwelling meets the need). Recreational and other common areas of the basement are not considered required rooms. Additional factors to consider which could affect the safety of the occupants of the home are: severely damaged structural components; and severe damage to or complete failure of major mechanical or electrical utilities."

On page 37 of the Manual, FEMA defines a basement as: "Any area of a building where the floor is below ground level on all sides. Split level homes, below ground level condominiums, and sunken living areas are excluded from the definition of a basement."



Damage Survey Considerations: Degree of Damage Categories (cont.)

0 – AFFECTED: Structure has minimal damage, is habitable / usable, and requires mostly cosmetic repairs to return it to pre-disaster condition. Examples: lost shingles or other minor roof problems; minimal damage to siding; broken windows which can be secured; debris or flood waters blocking otherwise undamaged roadway or bridge; etc. For flooding, the structure can be considered AFFECTED if there are less than 3 inches of water in an occupied or required room. (If water damaged the furnace and/or water heater, consideration can be given to classifying the damage as MINOR DAMAGE.) Structures with minor access problems due to flooding can also be considered AFFECTED.

Non-flood disasters for manufactured (mobile) homes: The home's frame is not bent, twisted, or otherwise compromised, and no structural components of the home have been damaged (i.e., windows, doors, wall coverings, roof, bottom board insulation, ductwork, and/or utility hook-up).

Flood disasters for manufactured (mobile) homes: Water is under the structure but did not touch the living unit or otherwise cause damage.

Note Regarding Inaccessible Structures: FEMA uses a fifth damage classification – "INACCESSIBLE" – which Michigan does not use. Rather, Michigan includes structures which are not significantly damaged, but are otherwise inaccessible by reasonable means due to incident-related loss of access, under the AFFECTED damage classification. Such structures are still habitable / usable, but access to them is temporarily unavailable due to road or bridge damage, significant flooding, landslide, severe erosion, or other condition which makes safe and reasonable access not possible.

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EXAMPLES OF AFFECTED STRUCTURES (0):

Damage Survey Considerations: Degree of Damage Categories (cont.)

1 – MINOR DAMAGE: Generally has less than 50% damage to structure, is not currently habitable / useable, but can be made habitable within 30 days. Examples of minor damage: a) damaged windows or doors which cannot be secured; b) damage to functional components (i.e., furnace, water heater, HVAC, etc.) of the structure; c) 3-18 inches of water in an occupied or required room; and d) damage, or disaster-related contamination, to private well or septic system.

Non-flood damage to manufactured (mobile) homes: The home's frame is not bent, twisted, or otherwise compromised, and it has not been displaced from the foundation. However, other structural components of the home have sustained minor damage (i.e., windows, doors, wall coverings, roof, bottom board insulation, ductwork, and/or utility hook-up).

Flood damage to manufactured (mobile) homes: The water line is below the home's floor system but the skirting or HVAC may be impacted.

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EXAMPLES OF STRUCTURES WITH MINOR DAMAGE (1):

Damage Survey Considerations: Degree of Damage Categories (cont.)

2 – MAJOR DAMAGE: Structure has sustained structural or significant (generally 50% or more) damage, is not habitable / useable, and requires extensive repairs (likely taking more than 30 days) before it can be made habitable again. Damage involves substantial failures of the structural features affecting strength and safety (e.g., foundation, walls, roof, floors, etc.) but which are repairable. For flood disasters, 18 inches or more of water on the first floor or water that covers electrical outlets can be considered MAJOR DAMAGE. In addition, homes with a basement may be considered for MAJOR DAMAGE if the water level has compromised the structural integrity of the home.

Non-flood damage to manufactured (mobile) homes: The home's frame is not bent, twisted, or otherwise compromised. However, there is more than minor damage (e.g., it has been displaced from the foundation) and other structural components have been damaged (i.e., windows, doors, wall coverings, roof, bottom board insulation, ductwork, and/or utility hook-up).

Flood damage to manufactured (mobile) homes: Water has impacted the floor system (to include belly board insulation, ductwork, and subflooring) or a water line of up to 12 inches within the living area.

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EXAMPLES OF STRUCTURES WITH MAJOR DAMAGE (2):

Damage Survey Considerations: Degree of Damage Categories (cont.)

3 – DESTROYED: Structure is a total loss or damaged to such an extent that repair is not feasible. What is left will have to be bulldozed off or dismantled for new construction. Any one of the following conditions of a structure may constitute a classification of DESTROYED: a) permanently uninhabitable; b) complete failure of two or more major components (e.g., collapse of basement walls / foundation, walls, roof, etc.); c) only the foundation remains; d) condemned structure that will require demolition or removal by county or local government because of disaster-related health and safety concerns; and e) an otherwise unaffected structure that will require removal or demolition by county or local government because of a confirmed imminent danger (e.g., impending landslides, mudslides, sinkholes, etc.).

Non-flood damage to manufactured (mobile) homes: The home's frame must be bent, twisted, or otherwise compromised. The home must be missing the roof or has sustained significant damage to the roof covering, sheathing, and framing.

Flood damage to manufactured (mobile) homes: Any of the following conditions constitute a classification of DESTROYED: a) a water line higher than 12 inches within the living area; b) the home's frame is bent, twisted, or otherwise compromised; and c) the home's interior is so compromised by contamination that clean-up is not feasible.

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EXAMPLES OF DESTROYED STRUCTURES (3):

Damage Survey Considerations: Degree of Damage Categories (cont.)

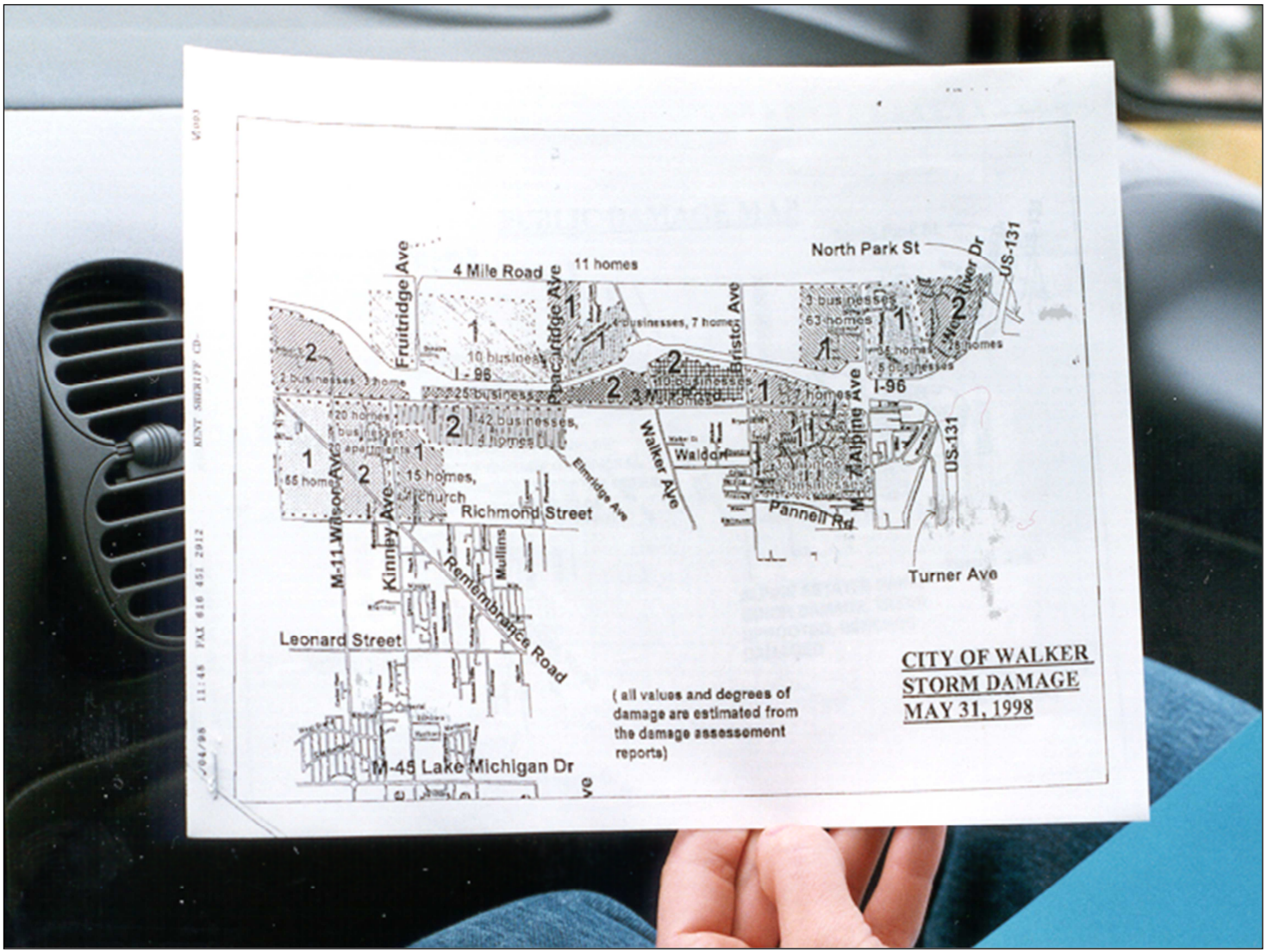
Damage Classification: Rapid Evaluation Matrix

Damage Classification	Currently Habitable / Useable?	Approximate % of Damage	Flood Depth: Traditional At-Site Built Structure	Flood Depth: Manufactured (Mobile) Home	Flood Duration: 1 Day or Less, Consider This Classification	Flood Duration: >1 Day, Consider This Classification
0 – AFFECTED	Yes; without repairs	Minimal damage; mostly cosmetic	Less than 3 inches of water in occupied or required room	Minor access problems; no damage affecting habitability	**0 – AFFECTED**	**0 – AFFECTED**
1 – MINOR DAMAGE	No; repairs likely to take less than 30 days	< 50% damaged; damaged windows and doors	Three (3) to 18 inches of water in occupied or required room	Water line is below the floor system; skirting or HVAC may be impacted	**1 – MINOR DAMAGE**	**2 – MAJOR DAMAGE**
2 – MAJOR DAMAGE	No; repairs likely to take more than 30 days	≥ 50% damaged; involves structural features affecting strength / safety	Eighteen (18) inches or more of water on the first floor or water that covers electrical outlets	Water impacts the floor system (to include belly board insulation, ductwork, subflooring); water line of up to 12 inches within the living area	**2 – MAJOR DAMAGE**	**3 – DESTROYED**
3 – DESTROYED	No; permanently uninhabitable	100%; repair costs exceed structure's value	Damage from flood makes structure permanently uninhabitable	Water line higher than 12 inches within the living area; structure frame is bent, twisted, or otherwise compromised; interior compromised by contamination that clean-up is not feasible	**3 – DESTROYED**	**3 – DESTROYED**

Notes: > = greater than; < = less than; ≤. = less than or equal to; ≥ = greater than or equal to. Follow the chart from left to right, beginning with the left hand column. For non-flood disasters, use the first three columns to evaluate. For flood disasters, use all of the columns to evaluate. Damage is expressed as a percentage of structure replacement value. Information sources: FEMA Publication 9327.2-PR, *"Preliminary Damage Assessment for Individual Assistance Operations Manual,"* July 2012, and previous editions of FEMA PDA guidance.

Damage Map(s)

Damage information recorded on the damage survey worksheets should be recorded on one or more maps (ideally one for private damage, as shown below, and one for public damage) with the predominant level of damage clearly indicated within each survey area. This area had a mixture of major damage ('2") and minor damage ("1").



Damage Survey Worksheet

(Showing how <u>private</u> damage is recorded)

Type of Disaster / Survey Date:	Flooding* / Severe Storm; 10/21/12	**County:**	Any County, MI
Street Name or Location:	Maple Street	**Local Jurisdiction:**	Any City / Township / Village, MI
Team Conducting Survey:	Smith / Jones / Thompson	**Damage Type (Public or Private):**	Private

Address or General Location	Degree of Damage				Type of Structure	Flood Level in Feet: B=basement F=first floor		Description of Damage (Include cost estimate for public facility damage. Include insurance coverage estimate for damage, if available / applicable. An alternative would be to use a simple alphabetic code for insurance coverage – e.g., N = no insurance; U = under insured; I = fully insured.)	Latitude / Longitude (if possible)
	0	1	2	3		B	F		
100 Block: 105 Maple Street		X			S	1.5	---	1.5 feet of water in basement only; has flood insurance (100%)	N42°57'19 / W085°07'45
108 Maple Street		X			S	1.5	---	1.5 feet of water in basement only; no flood insurance (0%)	N42°57'24 / W085°08'02
111 Maple Street			X		S	---	2.5	Water below door knob; basement inundated; no flood insurance (0%)	N42°57'19 / W085°07'58
114 Maple Street				X	M	---	1.5	1.5 feet of water above floor level – destroyed; has flood insurance (100%)	N42°57'19 / W085°08'58
200 Block: 207 Maple Street				X	S	---	---	Completely gone – destroyed; has insurance (100%)	N42°57'16 / W085°08'14
212 Maple Street				X	S	---	---	Front walls still standing; everything else gone; has insurance (100%)	N42°57'14 / W085°08'14
217 Maple Street				X	S	---	---	Roof / outside walls gone – destroyed; has insurance (100%)	N42°57'13 / W085°08'18
239 Maple Street	X				S	---	---	Downed tree damaged porch corner only; insurance info not available	N42°57'11 / W085°08'21
*Note: Short duration flooding – less than 8 hours									
TOTALS:	1	2	1	4				**<u>NOTE</u>:** After the survey is completed, this worksheet should be **RETAINED** locally for reference and follow-up by federal and state officials. It is recommended that **SEPARATE WORKSHEETS** be used, wherever possible, to survey public and private damage.	

Damage Classification	Currently Habitable / Useable?	Approximate % of Damage	Flood Depth: Traditional At-Site Built Structure	Flood Depth: Manufactured (Mobile) Home
0 – AFFECTED	Yes; without repairs	Minimal damage; mostly cosmetic	Less than 3 inches of water in occupied or required room	Minor access problems; no damage affecting habitability
1 – MINOR DAMAGE	No; repairs likely to take less than 30 days	< 50% damaged; damaged windows and doors	Three (3) to 18 inches of water in occupied or required room	Water line is below the floor system; skirting or HVAC may be impacted
2 – MAJOR DAMAGE	No; repairs likely to take more than 30 days	<u>≥</u> 50% damaged; involves structural features affecting strength / safety	Eighteen (18) inches or more of water on the first floor or water that covers electrical outlets	Water impacts the floor system (to include belly board insulation, ductwork, subflooring); water line of up to 12 inches within the living area
3 – DESTROYED	No; permanently uninhabitable	100%; repair costs exceed structure's value	Damage from flood makes structure permanently uninhabitable	Water line higher than 12 inches within the living area; structure frame is bent, twisted, or otherwise compromised; interior compromised by contamination that clean-up is not feasible

<u>TYPE OF STRUCTURE</u>: S – Single Family Home (Primary Residence); **M – Manufactured (Mobile) Home** (Primary Residence); **A – Apartment / Rental Unit** (Rental Residence); **V – Vacation Home / Cottage** (Secondary Residence); **B – Business** (For-Profit Organization); **NPO – Non-Profit Organization** (Non-Profit Organization); **P – Public Facility** (Also indicate the type of structure by name)

Damage Survey Worksheet

(Showing how public damage is recorded)

Type of Disaster / Survey Date:	Flooding* / Severe Storm; 10/21/12	**County:**	Any County, MI
Street Name or Location:	Northeast Quadrant	**Local Jurisdiction:**	Any City / Township / Village, MI
Team Conducting Survey:	Smith / Jones / Thompson	**Damage Type (Public or Private):**	Public

Address or General Location	Degree of Damage				Type of Structure	Flood Level in Feet: B=basement F=first floor		Description of Damage (Include cost estimate for public facility damage. Include insurance coverage estimate for damage, if available / applicable. An alternative would be to use a simple alphabetic code for insurance coverage – e.g., N = no insurance; U = under insured; I = fully insured.)	Latitude / Longitude (if possible)
	0	1	2	3		B	F		
Intersection of M-49 and CR-223		X			P, Road	---	---	Shoulder washout; minor pavement collapse; $5,000; **N**	N42°57'19 / W085°07'45
M-62 bridge at Oak River			X		P, Bridge	---	---	Partial washout of bridge deck; not usable; $52,000; **N**	N42°57'24 / W085°08'02
M-49 culvert at Perkins Drain				X	P, Culvert	---	---	Complete washout; culvert gone, roadbed collapsed; $80,000; **N**	N42°57'19 / W085°07'58
M-49 at mile marker 21	X				P, Road	---	---	15 downed trees on road; no damage; $3,000 to remove / dispose of	N42°57'19 / W085°08'58
M-49 bridge at Red Run Drain				X	P, Bridge	---	---	Bridge completely washed out; total replacement; $250,000; **N**	N42°57'16 / W085°08'14
Oak Township Public Works Garage (221 Oak Rd.)				X	P, Building	---	---	Building completely gone; total replacement; $900,000; **U**	N42°57'14 / W085°08'14
Oak Township Water Treatment Facility (600 Oak Rd.)		X			P, Building	---	---	Roof partially blown off; walls intact; $50,000; **U**	N42°57'13 / W085°08'18
*Note: Short duration flooding – less than 8 hours									
TOTALS:	**1**	**2**	**1**	**3**				**NOTE:** After the survey is completed, this worksheet should be **RETAINED** locally for reference and follow-up by federal and state officials. It is recommended that **SEPARATE WORKSHEETS** be used, wherever possible, to survey public and private damage.	

Damage Classification	Currently Habitable / Useable?	Approximate % of Damage	Flood Depth: Traditional At-Site Built Structure	Flood Depth: Manufactured (Mobile) Home
0 – AFFECTED	Yes; without repairs	Minimal damage; mostly cosmetic	Less than 3 inches of water in occupied or required room	Minor access problems; no damage affecting habitability
1 – MINOR DAMAGE	No; repairs likely to take less than 30 days	< 50% damaged; damaged windows and doors	Three (3) to 18 inches of water in occupied or required room	Water line is below the floor system; skirting or HVAC may be impacted
2 – MAJOR DAMAGE	No; repairs likely to take more than 30 days	≥ 50% damaged; involves structural features affecting strength / safety	Eighteen (18) inches or more of water on the first floor or water that covers electrical outlets	Water impacts the floor system (to include belly board insulation, ductwork, subflooring); water line of up to 12 inches within the living area
3 – DESTROYED	No; permanently uninhabitable	100%; repair costs exceed structure's value	Damage from flood makes structure permanently uninhabitable	Water line higher than 12 inches within the living area; structure frame is bent, twisted, or otherwise compromised; interior compromised by contamination that clean-up is not feasible

TYPE OF STRUCTURE: S – Single Family Home (Primary Residence); **M – Manufactured (Mobile) Home** (Primary Residence); **A – Apartment / Rental Unit** (Rental Residence); **V – Vacation Home / Cottage** (Secondary Residence); **B – Business** (For-Profit Organization); **NPO – Non-Profit Organization** (Non-Profit Organization); **P – Public Facility** (Also indicate the type of structure by name)

Damage Survey Worksheet

(Blank template* for field use)

Type of Disaster / Survey Date:		**County:**	
Street Name or Location:		**Local Jurisdiction:**	
Team Conducting Survey:		**Damage Type (Public or Private):**	

Address or General Location	**Degree of Damage**				**Type of Structure**	**Flood Level in Feet: B=basement F=first floor**		**Description of Damage** (Include cost estimate for public facility damage. Include insurance coverage estimate for damage, if available / applicable. An alternative would be to use a simple alphabetic code for insurance coverage – e.g., N = no insurance; U = under insured; I = fully insured.)	**Latitude / Longitude** (if possible)
	0	**1**	**2**	**3**		**B**	**F**		
TOTALS:					**NOTE:** After the survey is completed, this worksheet should be **RETAINED** locally for reference and follow-up by federal and state officials. It is recommended that **SEPARATE WORKSHEETS** be used, wherever possible, to survey public and private damage.				

Damage Classification	**Currently Habitable / Useable?**	**Approximate % of Damage**	**Flood Depth: Traditional At-Site Built Structure**	**Flood Depth: Manufactured (Mobile) Home**
0 – AFFECTED	Yes; without repairs	Minimal damage; mostly cosmetic	Less than 3 inches of water in occupied or required room	Minor access problems; no damage affecting habitability
1 – MINOR DAMAGE	No; repairs likely to take less than 30 days	< 50% damaged; damaged windows and doors	Three (3) to 18 inches of water in occupied or required room	Water line is below the floor system; skirting or HVAC may be impacted
2 – MAJOR DAMAGE	No; repairs likely to take more than 30 days	≥ 50% damaged; involves structural features affecting strength / safety	Eighteen (18) inches or more of water on the first floor or water that covers electrical outlets	Water impacts the floor system (to include belly board insulation, ductwork, subflooring); water line of up to 12 inches within the living area
3 – DESTROYED	No; permanently uninhabitable	100%; repair costs exceed structure's value	Damage from flood makes structure permanently uninhabitable	Water line higher than 12 inches within the living area; structure frame is bent, twisted, or otherwise compromised; interior compromised by contamination that clean-up is not feasible

TYPE OF STRUCTURE: S – Single Family Home (Primary Residence); **M – Manufactured (Mobile) Home** (Primary Residence); **A – Apartment / Rental Unit** (Rental Residence); **V – Vacation Home / Cottage** (Secondary Residence); **B – Business** (For-Profit Organization); **NPO – Non-Profit Organization** (Non-Profit Organization); **P – Public Facility** (Also indicate the type of structure by name)

*__NOTE:__ As desired, table size may be increased by adding rows.

DAMAGE SURVEY FORM FOR BUSINESSES AND NON-PROFIT ORGANIZATIONS

Usage Note: This customizable and expandable information collection tool can be used by businesses and non-profit organizations / facilities to independently assess and report on their own damages and impacts. The completed form should be returned to the EOC or other designated (local) location for compilation, analysis, synthesis, and reporting by the requested due date.

PURPOSE OF THIS SURVEY:

The **(name of jurisdiction)** Emergency Management Office needs accurate and timely information about this incident in order to determine its overall impacts and to facilitate appropriate response and recovery efforts. The information you provide will help in determining the nature, scope, magnitude, extent of loss, and anticipated duration of the incident. **DIRECTIONS:** Please fill out this form completely and submit it by **(due date)** to the **(name of jurisdiction)** Emergency Management Office using the contact information provided at the end of the form. If you have **immediate needs at your facility related to health and safety, please dial 911. Do NOT use this form to mobilize life safety assistance.** Also, this is **NOT** an application for state or federal disaster assistance; rather, it is an information gathering tool that will help local, state and federal officials determine whether or not such assistance may be required or warranted.

BASIC FACILITY INFORMATION:

Incident type:		Facility address:		Facility type: (i.e., business; non-profit)	
Incident date:		Facility contact person:		Primary facility function(s):	
Facility latitude / longitude:		Contact phone #(s):		Facility owner / operator:	
Facility name:		E-mail address:		Current operational status: (i.e., full service; partial service; closed; relocated)	

DAMAGE AND IMPACTS TO FACILITY:

Was facility damaged (Y/N)?		Assessment of damage: (i.e., minor damage; major damage; destroyed)		Other incident impacts: (e.g., facility evacuated or locked down; staff sheltered onsite; etc.)	
If Y, describe damage to buildings / structures:		Critical systems / infrastructure currently inoperable, if any:		Is facility on state or federal historic places registry (Y/N)?	
If Y, describe damage to equipment, furnishings, other contents:		Number of injuries at facility from incident:		If Y, describe damage / impacts to historic items:	
If Y, describe damage to critical systems / infrastructure:		Number of casualties at facility from incident:		Other information related to facility damage / impacts: (e.g., facility staff unemployed due to incident and anticipated duration; special events relocated or cancelled and financial impact)	

SPECIFIC NEEDS:

Functional Needs populations at facility (Y/N)?		Special services required for these populations (Y/N)?		Does facility require assistance (Y/N)?	
If Y, specify population(s) and numbers at facility: (i.e., elderly, non-English speaking, children, etc.)		If Y, specify services facility is unable to provide:		If Y, specify type(s) of assistance required and anticipated duration:	

INSURANCE COVERAGE:

Does facility have property / casualty insurance (Y/N)? (If Y, indicate full or partial)		Percent of damage covered by insurance:		If Incident is flood, does facility have flood insurance (Y/N)?	

SUBMIT COMPLETED FORM BY (desired date) TO: (provide specific submittal instructions, i.e., contact person, address, e-mail address, facsimile and phone numbers, etc.)

THANK YOU IN ADVANCE FOR ASSISTING (NAME OF JURISDICTION) IN DETERMINING THE EXTENT OF DAMAGE AND IMPACTS FROM THIS INCIDENT.

DISASTER DEBRIS ESTIMATING TECHNIQUES

Background Note: The following guidelines can be used to help estimate the amounts of disaster debris on the ground. By using these measures and some simple mathematical calculations, good ballpark debris figures can be generated in a relatively short amount of time. Determining the amount and types of disaster debris is a necessary first step in setting up a debris removal and disposal operation, and in determining potential costs associated with Category A (Debris Removal and Disposal) work under federal Public Assistance (PA), or Section 19 of 1976 PA 390 (MCL 30.419) state funding in the absence of federal PA funding. This information should be reported in the Public Property section of the MI CIMS Damage Assessment board. It can also be reported in the Current Situation (Debris) section of the MI CIMS EM Program Status board if early debris estimates are generated.

USACE "Quick" Debris Forecasting Formulas and Tables

(Sources: FEMA Debris Management Guide, FEMA 325; MSP/EMHSD Publication 109a – "Local Disaster Debris Management Planning Handbook")

Standard Acronyms / Terms. L – Length; W = Width; H = Height; CY = Cubic Yards; T = Tons; SF = Square Feet; C & D = construction and demolition debris (materials from damaged buildings / related); vegetative debris = downed trees / shrubbery (also called "woody debris")

Vegetative Cover Multiplier. The USACE vegetative cover multiplier is a measure of the amount of debris within a subdivision or neighborhood. The following table describes the three vegetative cover categories used by the USACE in debris forecasting:

Vegetation Cover	Description	Multiplier
Light	Includes new home developments where more ground is visible than trees. These areas will have sparse canopy cover.	1.1
Medium	Generally has a uniform pattern of open space and tree canopy cover. This is the most common description for vegetative cover.	1.3
Heavy	Found in mature neighborhoods and woodlots where the ground or houses cannot be seen due to the tree canopy cover.	1.5

Destroyed Single-Family Residence Debris. The following table developed by the USACE provides forecasted debris quantities for totally destroyed single-family, one-story, residential structures in the applicable vegetative cover category:

Typical House (SF)	Vegetative Cover: None	Vegetative Cover: Light (1.1)	Vegetative Cover: Medium (1.3)	Vegetative Cover: Heavy (1.5)
1,000 SF	200 CY	220 CY	260 CY	300 CY
1,200 SF	240 CY	264 CY	312 CY	360 CY
1,400 SF	280 CY	308 CY	364 CY	420 CY
1,600 SF	320 CY	352 CY	416 CY	480 CY
1,800 SF	360 CY	396 CY	468 CY	540 CY
2,000 SF	400 CY	440 CY	520 CY	600 CY
2,200 SF	440 CY	484 CY	572 CY	660 CY
2,400 SF	480 CY	528 CY	624 CY	720 CY
2,600 SF	520 CY	572 CY	676 CY	780 CY

DISASTER DEBRIS ESTIMATING TECHNIQUES (CONT.)

Mobile Home Debris. The typical mobile home generates more debris by volume than a single-family "stick built" home. Historically, the USACE has found the volume of debris from mobile homes to be 290 CY of debris for a single-wide unit and 415 CY of debris for a double-wide unit.

Personal Property Debris – Floods. The amount of personal property within an average flooded single-family home has been found to be 25-30 CY for homes without a basement and 45-50 CY for homes with a basement.

Damaged Single-Family Residence Debris. The USACE debris forecast table on the previous page only provides figures for totally destroyed, single-family, one-story, residential structures in the applicable vegetative cover category. Adjustments must be made for structures that incur major damage or minor damage based on Michigan's damage assessment "Degree of Damage Categories" found at Attachment G to this handbook. The MSP/EMHSD has modified the USACE table to provide figures for structures with major and minor damage, based on generalized percentage of damage estimates for each level of damage. For **major damage** (which indicates 50 percent or more and up to 99 percent of the structure is damaged), the debris forecast figure is set at **65 percent** of the USACE figure for each residential structure size. For **minor damage** (which indicates less than 50 percent of the structure is damaged), the debris forecast figure is set at **25 percent** of the USACE figure for each residential structure size. These modified figures are presented in the following table:

Typical House (SF)	Vegetative Cover: None	Vegetative Cover: Light (1.1)	Vegetative Cover: Medium (1.3)	Vegetative Cover: Heavy (1.5)
1,000 SF	**Major Damage: 130 CY** Minor Damage: 50 CY	**Major Damage: 143 CY** Minor Damage: 55 CY	**Major Damage: 169 CY** Minor Damage: 65 CY	**Major Damage: 195 CY** Minor Damage: 75 CY
1,200 SF	**Major Damage: 156 CY** Minor Damage: 60 CY	**Major Damage: 172 CY** Minor Damage: 66 CY	**Major Damage: 203 CY** Minor Damage: 78 CY	**Major Damage: 234 CY** Minor Damage: 90 CY
1,400 SF	**Major Damage: 182 CY** Minor Damage: 70 CY	**Major Damage: 200 CY** Minor Damage: 77 CY	**Major Damage: 237 CY** Minor Damage: 91 CY	**Major Damage: 273 CY** Minor Damage: 105 CY
1,600 SF	**Major Damage: 208 CY** Minor Damage: 80 CY	**Major Damage: 229 CY** Minor Damage: 88 CY	**Major Damage: 270 CY** Minor Damage: 104 CY	**Major Damage: 312 CY** Minor Damage: 120 CY
1,800 SF	**Major Damage: 234 CY** Minor Damage: 90 CY	**Major Damage: 257 CY** Minor Damage: 99 CY	**Major Damage: 304 CY** Minor Damage: 117 CY	**Major Damage: 351 CY** Minor Damage: 135 CY
2,000 SF	**Major Damage: 260 CY** Minor Damage: 100 CY	**Major Damage: 286 CY** Minor Damage: 110 CY	**Major Damage: 338 CY** Minor Damage: 130 CY	**Major Damage: 390 CY** Minor Damage: 150 CY
2,200 SF	**Major Damage: 286 CY** Minor Damage: 110 CY	**Major Damage: 315 CY** Minor Damage: 121 CY	**Major Damage: 372 CY** Minor Damage: 143 CY	**Major Damage: 429 CY** Minor Damage: 165 CY
2,400 SF	**Major Damage: 312 CY** Minor Damage: 120 CY	**Major Damage: 343 CY** Minor Damage: 132 CY	**Major Damage: 406 CY** Minor Damage: 156 CY	**Major Damage: 468 CY** Minor Damage: 180 CY
2,600 SF	**Major Damage: 338 CY** Minor Damage: 130 CY	**Major Damage: 372 CY** Minor Damage: 143 CY	**Major Damage: 439 CY** Minor Damage: 169 CY	**Major Damage: 507 CY** Minor Damage: 195 CY

DISASTER DEBRIS ESTIMATING TECHNIQUES (CONT.)

Other Useful Quick Reference Techniques. The following formulas and tables were developed by the USACE and are based on extensive field observations and calculations in catastrophic hurricanes and other storm events.

One story building: L' x W' x H' / 27 = (#) Cubic Yards x .33 (compaction factor) = **(#) Cubic Yards**
*(For example: the formula for a building that is 100' long x 50' wide x 10' high is….100 x 50 x 10 / 27 = 1,852 CY x .33 = **611 CY**)*

Debris pile: L' x W' x H' / 27 = **(#) Cubic Yards**
*(For example: the formula for a debris pile that is 50' long x 75' wide x 4' high is….50 x 75 x 4 / 27 = **556 CY**)*

Quick Reference Table – Debris Piles:

Length (Ft)	Width (Ft)	Height (Ft)	Volume (CY)	Tons (T) – C & D Debris	Tons (T) – Woody Debris	Approximate Size Reference
10	10	4	15	7.5	3.75	Small above ground pool
20	10	4	30	15	7.5	Medium above ground pool
30	10	4	45	22.5	11.25	Medium above ground pool
40	10	4	60	30	15	Large above ground pool
50	10	4	75	37.5	18.75	Large above ground pool

Quick Reference Table – Other:

Type of Debris	Volume (CY)	Tons (T)	Approximate Size Reference
Trees (15 @ 8" diameter)	40	10	8" diameter is roughly the size of a football at its widest point in the middle
One acre of mixed debris, 3.33 yards high	16,117	4029.25	Football field without the end zones, piled as high as a basketball rim

Volume to Weight Conversion Table:

Type of Debris	Tons (T)	Cubic Yards (CY)
Vegetative Debris (mixed)	CY / 4	T x 4
Softwood Vegetation	CY / 6	T x 6
Construction and Demolition (C & D)	CY / 2	T x 2

Debris Composition. While no standard composition data that can be applied to all hazard events, the USACE has developed general guidelines based on its years of experience in being involved in disaster debris management for hurricanes and other severe storms. As a general rule of thumb, most storm generated debris will be **30 percent clean woody (vegetative) debris and 70 percent mixed construction and demolition (C & D) debris**, in total. However, land use, land cover, and existing infrastructure (types of buildings) must be considered, as they will influence these estimates.

HAZARDOUS TREE SURVEY WORKSHEET

Background Note: This worksheet can be used to compile information about damaged or fallen trees that pose an imminent threat to public health / safety and/or property. The worksheet will be particularly useful when surveying damage from strong winds caused by severe storms or tornadoes, or when surveying damage caused by excessive ice and/or snow accumulation.

Survey Conducted By: _____ Date / Time of Survey: _____ Street Surveyed: _____

Address or General Location	Tree / Major Branches in Roadway or Public Alley	Tree / Major Branches Blocking Sidewalk	Tree Leaning over Roadway, Sidewalk, or Public Alley	Tree Leaning on Utility Lines	Tree Leaning on Home, Garage, or Other Structure	Hazardous Stump Present?	Approximate Tree Diameter < 12" 12-24" > 24"	Description of Hazardous Condition
Sample: 100 Oak		***X***				***X***	*> 24"*	*Stump has sharp edges exposed.*
TOTALS:								

INSTRUCTIONS

- Use separate worksheet for each STREET.
- Check the appropriate condition that you observe. Some situations may require more than one checkmark (e.g., tree blocking both roadway and sidewalk).
- The tan shaded columns are for DOWNED trees / branches. The blue shaded columns are for LEANING trees. The pink shaded column is for HAZARDOUS STUMPS. The gray shaded column is for the TREE DIAMETER. The purple shaded column is for a DESCRIPTION of the hazardous condition. The yellow shaded row is for the column totals for each hazard condition.
- Estimate the tree diameter. This is simply to separate out the largest, most potentially problematic tree hazard locations.
- Provide a description of the hazardous condition as appropriate. If structural damage is apparent, note that in the description. Leave blank if no explanation is required.
- If a street address is not readily apparent, use a general description instead (e.g., middle of 300 block of Maple Street).

GUIDELINES FOR DISASTER PHOTOGRAPHY

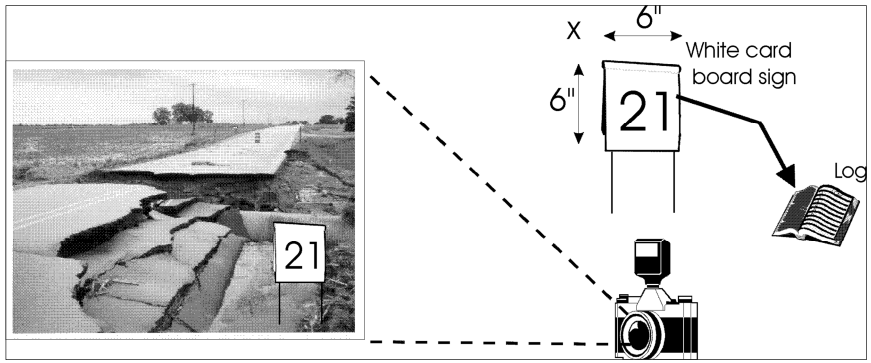
Taking photographs and/or video footage of incident scenes is a critically important part of the damage assessment process, yet it is a skill that is often overlooked in damage assessment training. As a result, many incident scene images do not adequately identify the site or portray the nature and extent of the physical damage. These guidelines are meant to help minimize sub-standard disaster photography by providing a simple process to follow when shooting photographs and/or video footage in the field.

Step 1: Site Identification. Proper identification of the site being shot is the first step in the process. Even the best image is worthless if the person reviewing the photograph or video cannot determine where the image was taken. In most instances, the person that actually took the photo or shot the video footage in the field is not the person that ultimately ends up reviewing the images at a later time. In addition, in many disaster situations, it is not uncommon for dozens of sites to be photographed or video recorded, greatly increasing the likelihood that the person shooting the images may not remember where each and every image was taken. Therefore, there is a definite need to establish the identification of the site when it is actually being recorded in the field.

Video Images. The person shooting the scene should verbally identify the name and general location of the site, as well as the date and time that the video is being shot. This should be done for every site being shot. That way, any chance for misinterpretation of the site location is eliminated. It is also important to remember to keep the camcorder as still as possible when shooting the footage, to avoid the "ocean motion" that is prevalent in many amateur videos. Unnecessary and excessive movement of the camcorder greatly detracts from the video images. In addition, unnecessary background conversation and noises should be kept to a minimum to provide for the best possible audio quality. Lastly, as a rule of thumb, you should not focus on a particular site image for more than 15 seconds. For example, you may want to show the "context" image for 15 seconds, the "curbside" image for 15 seconds, and the "close-up" image for 15 seconds. Focusing any longer on a site image will make the footage monotonous and unnecessarily long.

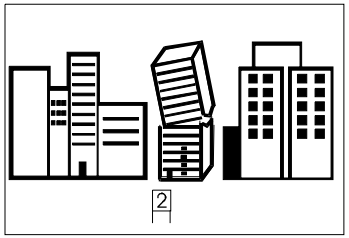
Photographic Images. If using a digital camera or other personal electronic device (PED) that allows image notes to be created, the site name and an identifying number can be established as each location is photographed. This could also be done electronically as the images are uploaded onto a computer in the EOC. If this is not technically possible or feasible because of time and/or device constraints, the photographer must use an alternate method to properly identify each location in the field.

A simple but effective "manual" method that can be used is for the photographer to assign a number to each site, and record that number and site location in a notebook. For example: **Site 1:** Smith Street Bridge, over the Green River; **Site 2:** Maple Drain culvert under River Road; **Site 3:** Oak Street Senior Center, Pine City; etc. A small cardboard sign (approximately 6" X 6" in size), attached to a wire or wood stake, with the site number clearly marked in black permanent marker, should be placed in the ground at the edge of the site so that it is visible within the camera image frame. This sign will clearly identify the site in the photograph. The sign should be placed in such a manner that it will be in reasonable focus in the final photograph. Each site should be numbered chronologically in this manner, not each image. In other words, all images at site XYZ should be labeled with the number 1, all images at site PDQ should be labeled with the number 2, and so on. Numbering should be continuous (i.e., not repeated). The graphic on the following page provides an example of how this method can be used in the field.

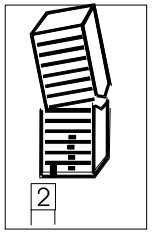


Each disaster site should be photographed from a minimum of three different positions to ensure proper image documentation.

Step 2: Context Image. The context image will show the damaged site in relationship to other surrounding structures and land uses. In other words, this image would be shot from a distance such that the site in question, plus the immediate surrounding properties, can be easily viewed within the frame. Such an image would provide the "big picture" of where the site sits in relationship to everything around it. For example:



Step 3: Curbside Image. The curbside image will show the damaged site as it would appear if you were standing in front of it in the street. The site should fill the image frame from edge to edge. For some sites, it may be necessary to stand a little further back than curbside to obtain the proper edge to edge image, but the principle remains the same. This image should contain only the site, and not the surrounding properties. This image will provide a mid-range view of the damage at the site. For example:



GUIDELINES FOR DISASTER PHOTOGRAPHY (CONT.)

Step 4: Close-Up Image. The close-up image will show the damaged site, or portion of the site, as it would appear if you were standing directly in front of it, approximately 5' - 15' away. This image would be particularly useful in highlighting specific details of the damage, such as focusing on a damaged doorway to a building or a hole in a roadway. In some cases, more than one close-up image will be necessary to adequately portray the damage. For example:

Step 5: Aerial Image (as appropriate). Some incidents lend themselves to aerial imagery for damage assessment purposes better than others. The types of incidents for which aerial photographs (taken from a helicopter and/or fixed- wing aircraft) may be most beneficial in determining the scope and magnitude of damage include but are not limited to the following situations:

- Widespread incidents where the magnitude of damage makes ground surveys impractical from a time and human resource standpoint and/or physical standpoint; the impacted area is simply too large to survey from the ground. (This is particularly relevant in tornado / severe storm incidents or large wildland fires where thousands of acres may be affected.)

- Incidents where whole communities or major segments of a community have been destroyed or damaged to such a degree that little, if anything remains on the ground to match up with pre-incident conditions. (This is particularly relevant in tornado / severe storm incidents where small towns or entire sections of larger communities might be virtually wiped away.)

- Incidents that occur in physically inaccessible terrain for ground crews (e.g., such as a wildland fire in heavily forested land or a marshy, low-lying area, or an oil spill involving miles of waterway).

- Incidents that involve an evacuation of large numbers of individuals (e.g., nuclear power plant accident, terrorist incident, etc.) which requires an aerial viewpoint to properly assess and monitor traffic flow and traffic impediments; ground level assessments are generally not effective for this scenario.

- Incidents at state or local correctional facilities (e.g., a riot) which require an aerial viewpoint to properly assess and monitor damage (and where ground level assessment would be nearly impossible due to inaccessibility, security, and personal danger issues).

- Incidents where aerial assessment is required to verify / substantiate the "completeness" of assessments conducted on the ground (i.e., to assure that all damaged areas have been assessed in situations where it might otherwise be difficult to make that assurance, such as a wildland fire with multiple burn sites, a tornado with multiple impact areas, or an oil spill involving miles of waterway).

- Incidents where aerial photographs of damage, the impacted area, and general incident conditions are required or desired for decision making and/or to verify the thoroughness and/or results of assessments.

- Incidents where it is necessary to provide a situational overview for "VIPs" (e.g., major political office holders) for the purpose of obtaining support for additional resources and/or a state or federal declaration

For most incidents, aerial imagery will not be required; rather, ground assessment will be the most effective (operationally and cost-wise) method for obtaining the necessary assessment information. However, in the above (and similar but not specified) scenarios, aerial reconnaissance can be an effective and time-saving assessment method.

Aerial Photography Assets. Unfortunately, not all local emergency management program jurisdictions in Michigan have, or have ready access to, the aerial assets required to take aerial photographs. This limits their use in most incidents. In addition, conducting aerial reconnaissance operations can be very expensive and therefore, for most jurisdictions, this is not a particularly viable option for all but the most severe and/or widespread of incidents. However, if it is determined that aerial imagery is required for assessment purposes, there are several potential sources of aerial assets if the jurisdiction does not own or have ready access to them. The following sources (listed in general order of preference) potentially can be tapped if aerial assessment assets are required:

- Private / NGO entities such as local television / radio stations, private flying services, or local corporations
- Surrounding jurisdictions (through mutual aid)
- Local college / university aerial programs, if applicable
- State departments / agencies (i.e., MSP, MDOT, MDMVA) via request through the MSP/EMHSD
- The Civil Air Patrol (in accordance with the established MOU with the State of Michigan, via request through the MSP/EMHSD)
- Surrounding states (via EMAC request through the MSP/EMHSD, or by mutual aid)
- Federal agencies under NRF mission assignment by FEMA (if the incident has or is likely to result in a federal Stafford Act declaration)
- Federal agencies and/or other states under interagency wildfire response protocols (if the incident is a wildland fire)

Local EMCs should consult first with their MSP/EMHSD District Coordinator to determine the need for aerial damage assessment photographs. In most cases, aerial photographs will not be necessary, and this consultation may save the jurisdiction from the need to mobilize (and possibly incur expenses for the use of) aerial assets.

Step 6: Submit Images in MI CIMS. The final step of the process is to properly attach and submit the photographs in the MI CIMS. If there are a large number of disaster sites which have been photographed and/or a large number of photographs have been taken, it is not necessary to submit all of them to the MI CIMS Damage Assessment board. Rather, a representative sampling of the most severely damaged sites / facilities can be submitted as attachments, along with appropriate explanation, to provide examples of the nature and extent of damage in the worst-hit areas. The remaining photographs can be kept locally (along with the corresponding damage survey worksheets) for possible use later by federal and state inspectors if a PDA is conducted.

FIELD SURVEY KITS

Field survey kits will be provided to team representatives prior to being dispatched to conduct assessments. Field survey kits will consist of the following items:

_____ Map(s) of the affected area(s), appropriate type, scale and clarity for conducting assessments and accurate recording of information
(Note: If necessary, maps can be obtained directly from the affected local jurisdictions.)

_____ Laptop computer or other personal electronic device equipped to collect and store information (**if** information will be collected and compiled electronically in the field)

_____ Basic manual recording tools (markers, pens, pencils, rulers, clipboard, etc.)

_____ Global Positioning System (GPS) units, set up for the disaster area (**if** geospatial data will be collected)

_____ Calculator

_____ Tape measure or small measuring wheel, as necessary and appropriate for the survey work being done

_____ Damage survey worksheets

_____ Basic communication tools (cellular phone, radio, pager, etc.), as necessary and appropriate

_____ Copy of MRIAT Assignments and Standard Operating Procedures

_____ Copy of MSP/EMHSD Publication 901 – "Michigan Damage Assessment Handbook"

_____ Necessary telephone lists / directories

_____ Badge, ID card, or other appropriate form of personal identification

_____ Nylon jacket or vest for field identification and protection from the elements, as necessary and appropriate

_____ Camera, video camera, or personal electronic device with these features (including any adaptors, chargers, or other accessories as required)
(Note: Not every kit will have these items. Some situations may only require one camera, video camera, or PED which will be assigned to the Team Leader.)

_____ Hard hat, if conducting assessments in potentially hazardous areas

_____ Bug spray / sun screen (warm weather only)

_____ Flashlight (as necessary and appropriate for dark areas and/or night time field surveys)

_____ Small first aid kit

_____ A method of "tagging" sites that have been surveyed (e.g., plastic flagging tape, temporary pavement paint, etc.), as necessary and appropriate

_____ Carrying bag or plastic box for the above items

Note: Personal protective equipment (PPE) will be provided if the team is required to conduct operations in a post-WMD attack environment or other hazardous conditions. Refer to the "Assessment Protocols for Weapons of Mass Destruction Attacks" section for more details on PPE.

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