

PART 6:

HAZARD MITIGATION

Floodplain managers agree: It's not *if* your community will be flooded.

It's *when*.

Those who have been hit by a flood or other disaster usually regret they were unprepared. Whether it's a house or a community, everyone can take steps to be ready for the inevitable.

Part 6 covers three ways to get ready:

- ◆ Develop a disaster operations/recovery plan to be ready to respond to a disaster immediately,
- ◆ Prepare and adopt a hazard mitigation plan, and
- ◆ Know the sources of assistance to implement a mitigation plan.

SECTION 19: DISASTER OPERATIONS

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This section covers the steps and procedures that a permit office should follow after a disaster. The rules are the same for floods or any other kind of disaster. Remember: it does not matter what damaged the buildings in the floodplain. If they are damaged, the floodplain administrator is responsible to see that they are repaired according to the standards in the floodplain management ordinance.

19.1. DISASTER OPERATIONS

After a disaster, everyone will expect the floodplain administrator to respond quickly and efficiently, without regard to other priorities. He or she will have to take on emergency post-disaster responsibilities, often at the expense of not performing normal duties.

In addition, floodplain administrators may have suffered damage or loss of their own. So, while they are at work helping others, they may not be getting the help they need. Add to this, the need to be available at least 12 hours a day, with few trained helpers.

There may be pressure from the public and elected officials to waive normal procedures and regulations in order to help people return to normal as fast as possible. This, in spite of the fact that “back to normal” means people and buildings exposed to the type of flooding that may have caused the disaster in the first place.

In short, residents and businesses are primarily concerned with getting back to normal. Stress levels are high, patience can be low, the environment is unfamiliar, and there is never enough time or money. All of this adds up to good reason to prepare now, before the next disaster hits.

To help prepare for this scenario, it is strongly recommended that the permit office prepare procedures that will ensure full and fair enforcement of the regulations during this time of stress, confusion, and controversy.

19.1.1. Emergency operations

The emergency manager is responsible for disaster and emergency response activities, such as evacuation, rescue, sandbagging, and coordination with the county, State, and Federal emergency management agencies. Once the disaster is large enough, the emergency manager will open up the Emergency Operations Center (EOC).

The floodplain administrator may have a role during the emergency. The permit office usually is expected to have a representative in the EOC during the disaster. The administrator should meet with the emergency manager to review what he or she expects to be done before, during, and after the disaster.

At some time, the community will move from the emergency phase to the recovery phase. The administrator should also review with the emergency manager what the office needs to be doing to help the community recover, and at what point staff are free to pursue the activities covered in this section.

19.1.2. Building condition survey

A building condition survey is conducted to help the permit office manage time and resources most efficiently. The survey determines:

- ◆ If any building is dangerous and should not be reentered without a careful inspection.
- ◆ Which buildings will need a building permit before they can be repaired or reoccupied.

When possible, the building condition survey is done in conjunction with the emergency manager's initial damage assessment. If the area affected is relatively small, the survey may be skipped and the permit office can immediately begin inspecting damaged buildings.

The building condition survey is conducted from outside all buildings, usually from a vehicle. Depending on the severity and duration of flooding, the survey may be conducted concurrently with the emergency manager's initial damage assessment. A photo should be taken of each building, showing any damage that is visible from outside.

On work maps (see Section 19.1.4.), the floodplain administrator codes each building with an "A," "B" or "C" for the three categories of building condition:

A - Apparently safe: No exterior signs of structural damage. People can be allowed back in, but they will need building permits for repairs;

B - Building obviously substantially damaged: The flood swept the building away, it has collapsed or it is missing one or more walls. The building cannot be reoccupied without major structural work;

C - Could be substantially damaged: The building may be substantially damaged, but such damage is not obvious. Any building with more than two feet of water over its first floor falls in this category if it does not qualify for category B;

When the field work is done, summarize the survey findings and plot them on a master mitigation map. Use color coding, so areas coded B and C — those that are or may be substantially damaged — will stand out.

19.1.3. High water marks

High water marks should be marked with spray paint or other highly visible method on telephone poles, trees, etc. They prove to be very valuable records. They will help residents relate the last flood to the regulatory protection level. For example, if the flood was estimated to be two feet below the base flood, people can be told that if they were substantially damaged, they will have to elevate their homes at least two feet above the high water marks.

High water marks are also important for recording the extent of the flood and adding to the hydrologic record. Someone, usually the community's engineer, should be responsible for obtaining readings from stream gauges and other high water marks as they are reported. Using these high water marks, the engineer should prepare a flood boundary map and estimate a flood recurrence interval.

19.1.4. Work maps

The permit office should have work maps of the floodplain that show buildings, addresses, and elevation contour lines. They should be sized for use during the survey. Made in advance of a disaster, they should be on letter or legal size paper for easy use in a vehicle.

Before the survey, the floodplain administrator should review the work maps for the affected area(s) and, using the high water mark data, determine which areas are worst hit. This can be done by plotting known flood boundaries or matching high water marks to the elevation contour lines. Any area where the flood crest was two feet or more above the buildings' adjacent grade should be outlined on the map and designated as the first priority for the building condition survey.

19.1.5. Notice to owners

Upon completing the survey, letters should be hand-delivered to each property surveyed, including those assessed as apparently safe. Each letter should include the building's address and, where known, the owner's name. A sample letter is in Figure 19-1.

Copies should be kept in the permit office and a file on each property should be started. The files should be designated as "B — Building obviously substantially damaged" or "C — Could be substantially damaged."

With the letter, a copy of the FEMA/Red Cross book, *Repairing Your Flooded Home* should be included. Supplies are available from FEMA or the Red Cross. This book may be reproduced even including the community's name on the cover. FEMA and the Red Cross encourage this, as it will make the book more pertinent to local readers.

The requirements stated in the notice should also be publicized. Sometimes well-meaning friends and organizations help people clean up and repair so fast, that they don't realize when a permit is needed.

19.2. REGULATING RECONSTRUCTION

19.2.1. Permit requirements

As soon as possible after the flood, the floodplain administrator should contact IDNR/OWR and the FEMA Regional Office to review reconstruction regulatory requirements and to see if there are any new guidance documents.

The community must require a permit to repair any flooded building in order to determine if any buildings are substantially damaged (see Section 16.3. for a detailed discussion on substantial damage and how to determine if a building has been substantially damaged). The floodplain administrator cannot wait for the property owners to voluntarily apply for a permit. The substantial damage determination must be done promptly after the damage, even if the owner delays the actual repairs. A permit is needed for each building that will be repaired by removing, altering, or replacing the roof, walls, siding, wallboard, plaster, insulation, paneling, cabinets, flooring, electrical system, plumbing, heating, or air conditioning. These repair/reconstruction projects must meet the building code and flood protection ordinance.

The requirement for a permit cannot be waived, although the governing board may opt to waive permit fees. The board may not amend or ignore the NFIP substantial damage requirement. To do so would subject the community to NFIP sanctions.

Dear [Name]

The permit office conducted a windshield survey of flooded buildings in your neighborhood. A review of your building from the outside indicates that the structure was affected by the recent flood. Here are some things you should know:

1. Repairs to your building require a permit from the City's permit office. Before you remove, alter, or replace any of the following items, you **MUST** obtain a building permit: the roof, walls, siding, wallboard, plaster, insulation, paneling, cabinets, flooring, electrical system, plumbing, heating, or air conditioning.
2. The permit office will conduct a complimentary inspection of the damage to your building. This inspection will help you identify what needs to be repaired. It will also identify if a permit is needed and if your building could be substantially damaged. There is no cost for this inspection but it must be taken before you begin your repairs or reconstruction. We will contact you when we plan to do the inspection. If you have a preferred time, please call us to arrange an appointment.
3. You may proceed with clean up activities and temporary emergency repairs without a permit. These include:
 1. Removing and disposing of damaged contents, carpeting, wallboard, insulation, etc.
 2. Hosing, scrubbing, or cleaning floors, walls, ductwork, etc.
 3. Covering holes in roofs or walls and covering windows to prevent the weather from inflicting further damage.
 4. Removing sagging ceilings, shoring up broken foundations, and other actions to make the building safe to enter.
4. Some day in the future, your area will flood again. There are things you can do during repair and reconstruction to reduce damage from the next flood. Many of these are discussed in the attached book, *Repairing Your Flooded Home*. We'll be glad to talk to you about protecting your property from future flooding. If we receive a disaster declaration, there may be some financial assistance to help pay for making your property safer than it was before. In the meantime, read Step 8 in *Repairing Your Flooded Home* for some ideas.
5. In order to screen out possible opportunists from taking advantage of the current situation, any contracted work must be done by a firm licensed to work in the City. Furthermore, residents are cautioned and warned *not* to sign blank contracts, agree to have work performed without first seeing the contractor's registration card, or allow work or alterations not authorized by the City permit office.

For further information, please contact the permit office at _____.

Sincerely,

[Name], Director
Permit Office

Attachment: Repairing Your Flooded Home

Figure 19-1: Sample letter to flood damaged property owner
(Reword for other types of disaster)

19.2.2. Clean up and emergency repairs

The community may allow cleanup and temporary emergency repairs to proceed without a permit. These include:

- ◆ Removing and disposing of damaged contents, carpeting, wallboard, insulation, etc.
- ◆ Hosing, scrubbing or cleaning floors, walls, ductwork, etc.
- ◆ Covering holes in roofs or walls and covering windows to prevent weather from inflicting further damage.
- ◆ Making the building safe to enter by removing sagging ceilings, shoring up broken foundations, and other actions.
- ◆ Opening walls and drying out cavities to prevent mold.

The floodplain administrator may want to identify which buildings may need emergency work and review with the owner the benefits of having professional contractors do some of it.

Structural alterations — such as removing floors or studs, or replacing a furnace — are not allowed without a permit.

Owners of potentially substantially damaged buildings should be advised against making major repairs unless the building presents a safety hazard, because their buildings may be purchased, modified and/or demolished later.

19.2.3. Initial inspection

Section 19.1.5. reviewed the first step in enforcing the repair permit requirement: Deliver the notices to property owners after the building condition survey and start a file on each property.

As soon as possible after the notice is delivered, the floodplain administrator's office should inspect each flooded property to review needed repairs and determine if a permit is required.

A checklist should be used to make the inspection quick and consistent. A sample checklist is shown in Figures 19-2 and 19-3. A copy of the completed inspection should be given to the property owner, along with safety, health, and repair information.

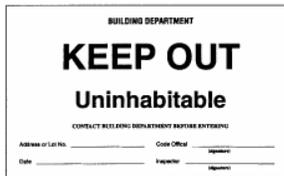
19.2.4. Posting

Upon completion of the inspection, the appropriate sign should be posted on the front of the building so it is clearly visible from the street. Appropriate colored signs can be obtained in volume from the model code organizations. The ones shown here are from the Building Officials and Code Administrators (BOCA) and are color coded for easy viewing from the street.



If the building needs repairs that do not require a permit, post “Safe for Occupancy” and “Approved to Connect” (utilities) signs. These signs are usually green.

If a permit to make repairs is needed, post the “Habitable — Repairs Necessary” sign. These signs are usually yellow.



If it is not safe to clean up or work on the building without major structural repairs, post a “Keep Out — Uninhabitable” sign. These signs are usually red.

Only a representative of the permit office may remove or replace a sign after permits have been issued and repairs are made. The “safe for occupancy” signs may be removed by the owners in accordance with instructions issued by the community (for example, the permit office may want all signs posted until all inspections have been completed).

19.2.5. Follow up

Here are some things to help with enforcement:

- ◆ As procedures are developed, check with utility companies and appropriate community utility departments. Advise them of the enforcement procedures.
- ◆ If not in place, establish a policy that utilities may not turn service back on unless there is an “Approved to Connect” sign posted on the building. This will help greatly in getting people to comply with the regulations after a disaster.
- ◆ Instruct police and other departments about the permit requirements and ask them to report to any construction projects under way without posted permit signs.
- ◆ Within a week of issuing the notices to the owners, visit the notified properties to ensure that the owners are abiding by the requirements.
- ◆ Keep a master list or map to track your survey, inspection and permit application findings.
- ◆ The FEMA’s *Residential Substantial Damage Estimator* software can be very helpful.

Post-Disaster Building Inspection Checklist – Page 1

Property address: _____ Date: _____

Owner: _____ Phone: _____

Check the appropriate column. Column 1 items note that the damage is minor, column 2 items can be expensive to repair, and column 3 items are indicators of substantial damage. Do not count clean up costs or damage to contents (including plug-in appliances) and other items not part of the building's structure (detached structures, fences, sidewalks, swimming pools, etc.).

1	2	3	General condition
___			Building appears sound and safe to enter, needs minor work to make habitable
	___		Apparently safe to enter, needs extensive cleaning/repairs
		___	Foundation, floor, wall or ceiling damage such that building not safe to enter
Depth of water			
___			In crawlspace, <2" in unfinished basement, not in building
___			In unfinished basement, only affected contents and utilities
	___		< 3' in finished basement or over first floor
		___	≥ 3' over first floor or in finished basement
Foundation			
			Type of foundation: ___ Slab ___ Basement/split level ___ Crawlspace
___			No signs of cracks or settling.
	___		Cracks in basement or crawlspace walls
		___	Buckling of slab or basement floor, broken crawlspace or basement wall
Exterior			
			Type of exterior walls: ___ Masonry ___ Wood/aluminum/vinyl siding
___			No signs of cracks or swelling, doors/windows stick but work
	___		Some swelling or warping of walls, doors/windows may need to be replaced
	___		Deck, porch, balcony damaged
		___	Shifting of wall on foundation, wall broken
Floors			
___			Concrete/tile/bare wooden floors: no signs of damage
___			Tile/vinyl/linoleum coming loose, can be cleaned and reglued
	___		Carpeting/vinyl/linoleum soaked, needs to be replaced
		___	Wooden floor or subfloor warped, broken, or needs replacement
Interior			
___			Water did not reach any wallboard, paneling or insulation, doors stick but work
	___		First four feet of wallboard, paneling or insulation must be replaced
	___		All wallboard, paneling or insulation in the lowest floor must be replaced
	___		Doors/molding/built-in bookcases swollen, warped, need to be replaced
		___	Studs/walls broken, shifted
		___	Ceiling sagging/collapsing

Figure 19-2: First page of sample building inspection checklist

Post-Disaster Building Inspection Checklist – Page 2

1	2	3	<p>Heating & central air conditioning</p> <p>Type of system: ___ Forced air ___ Electric baseboard ___ Other: ___</p> <p>___ Water did not reach any electrical parts, gas jets, or ductwork</p> <p>___ Ductwork needs to be disassembled and cleaned or replaced</p> <p>___ Gas jets and/or electrical parts need to be cleaned or replaced</p> <p>___ Propane/fuel tank needs to be reconnected and/or anchored</p> <p>Electrical</p> <p>___ Water did not reach any outlets, switches, meters, or fuse or breaker boxes</p> <p>___ Outlets, switches, breakers, lights or other fixtures need to be replaced</p> <p>___ Meter or service box need to be repaired or replaced by a professional</p> <p>Plumbing</p> <p>___ Drains and sewers need to be cleared</p> <p>___ Sump pump needs to be repaired or replaced</p> <p>___ Water heater needs to be replaced <i>[need a permit or licensed plumber?]</i></p> <p>___ Water softener needs to be replaced <i>[need a permit or licensed plumber?]</i></p> <p>Kitchen and bath</p> <p>___ Kitchen and bath(s) only need to be cleaned up</p> <p>___ Built-in appliances, ovens, etc. need cleaning by a professional</p> <p>___ Built-in appliances, ovens, etc. need to be replaced</p> <p>___ Cabinets/counters warped or otherwise need to be replaced</p> <p>___ Plumbing fixtures cracked, broken or need to be replaced</p> <p>___ ___ ___ Number of checks in each column</p> <p>Completed by: _____</p>
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If all checks are in column 1, no building permit is needed. If there are any checks in columns 2 or 3, a substantial damage determination must be conducted, a building permit must be applied for, and a repair/reconstruction estimate (prepared and signed by a licensed contractor) must be submitted.

Except where professional cleaning is needed, any items checked in columns 1 or 2 can be performed by the owner.

A licensed contractor may charge for the repair/reconstruction estimate, especially if the owner intends to do the work.

Any item checked in column 3 and any alteration to the electrical or plumbing systems must be performed by a licensed contractor.

The owner should read *Repairing Your Flooded Home*, page 15-29 for clean up and repair guidance and pages 39-41 for mitigation suggestions to incorporate into the repairs.

Figure 19-3: Second page of sample building inspection checklist

19.2.6. Flooded buildings

Flooded buildings are harder to inspect than those damaged by other means. Much of the damage is hidden behind walls or under floors, so the owner may not recognize the long term effects of water, moisture, and mold.

The community should require that the wallboard/plaster and insulation be removed from a flooded building. Once the owner says the framing members are dry, an inspection should be conducted. Check the cleanliness and moisture content before allowing the walls to be recovered. If the studs are too wet, tell the owner to allow them to dry more before they are covered over.

The best way to measure the level of moisture in wood is with a moisture meter. A moisture meter can be obtained through woodworking specialty companies. It needs to have a probe that can be stuck into the wood.

If the wood's moisture content exceeds normal levels for that area of the country (usually 10% - 15%), it is too wet to be covered by paint or wallboard. Reinspect it later after it is allowed to dry some more. If the owner is anxious to rebuild, make sure he or she has a copy of *Repairing Your Flooded Home*. Step 4 of that book reviews how to speed up the drying process.

19.2.7. Contractor quality control

After a disaster, not-so-honest or unqualified contractors offer to help disaster victims, sometimes offering cut rates or special deals. A community may want to control this by requiring that certain construction and reconstruction work be done by qualified and licensed people.

If the community licenses contractors, advise property owners of this requirement through the news media. Handouts can also be provided on dealing with contractors and what to do in case of a dispute (for some good language, see Pages 41-43 in *Repairing Your Flooded Home*).

If the community receives a sufficient number of complaints, the contractor's license to do business should be revoked. The community can also report bad contractors to State licensing agencies and/or the Consumer Protection Division in the Illinois Attorney General's office.

The community's work does not have to be a series of confrontations with contractors. They can be a best ally when telling a property owner why things have to be done a certain way. They also can help encourage property owners to retrofit and take additional steps to protect themselves from the next flood. The community may want to conduct workshops for contractors on flood repairs, mitigation measures, funding opportunities, etc.

19.3. ADMINISTRATION

19.3.1. Permit forms

If a permit is required, the property owner should be given the forms needed and told what repairs, if any, can proceed before the permit is issued. Keep these forms in the property's file:

- ◆ Notice to the owner (Figure 19-1).
- ◆ Initial inspection checklist (Figures 19-2 and 19-3).
- ◆ Permit application.
- ◆ Repair/reconstruction estimate.
- ◆ Substantial damage worksheets or the data files from *the Residential Substantial Damage Estimator* software.
- ◆ Inspection records.
- ◆ FEMA Elevation or Floodproofing Certificate, if the building is required to be elevated or floodproofed.
- ◆ Certificate of occupancy.

19.3.2. Public information

Communities should tell residents about the regulatory requirements and the need to carefully clean and rebuild. The floodplain administrator should issue news releases and/or distribute materials to advise property owners about:

- ◆ Activities that need a permit.
- ◆ Activities that do not need a permit (The language in Figure 19-1 could form the basis for a news release).
- ◆ The substantial damage rule.
- ◆ The benefits of Increased Cost of Compliance flood insurance coverage (see Section 16, Substantial Damage).
- ◆ The need for licensed contractors, if required in the community.
- ◆ The information provided in steps 2, 3, and 4 in *Repairing Your Flooded Home*, such as taking pictures for insurance and disaster assistance claims before throwing things away, how to drain a basement without breaking the walls, and health and safety precautions.
- ◆ The need to include property protection measures as part of repairing homes or businesses. People need to recognize that “returning to normal” means returning to a building that is subject to another flood.

19.3.3. Technical assistance

Many technical issues can arise during post-disaster permit operations, but there are many sources of assistance:

- ◆ Call IDNR/OWR and the FEMA Regional Office first. If there was a disaster declaration, they may be able to provide technical assistance staff or workshops to clarify things.
- ◆ Check with BOCA for publications and example forms for post-disaster operations.
- ◆ Ask the county health department or emergency manager for site-specific guidance on how to ensure that a building is fit for reoccupancy, well water is drinkable, etc.
- ◆ The University of Illinois Cooperative Extension has post-disaster materials and can provide advice on technical matters. Check their website for the latest and appropriate contacts in the area: www.ag.uiuc.edu.

Some communities require that a contractor certify that a building has been properly cleaned. This should be allowed only if the contractor is qualified to do so. Two organizations certify repair contractors. They can tell who is certified and what qualifications they have.

The Institute of Inspection, Cleaning and Restoration Certification (IICRC)
2715 E. Mill Plain Blvd.
Vancouver, WA 98661
Phone: 360/693-5675
www.iicrc.org

Association of Specialists in Cleaning and Restoration (ASCR)
9810 Patuxent Woods Dr. Suite K
Columbia MD 21046-1595
Phone: 443/878-1000
www.ascr.org

19.3.4. Staff assistance

If the disaster affected many properties, the permit office may need additional people to perform survey and inspection work. Staff assistance can come from:

- ◆ A mutual aid agreement with neighboring communities. There may already be some agreements with neighbors on sharing staff from other offices. The floodplain administrator should work with the emergency manager on procedures and agreement language.
- ◆ Other communities willing to offer help; check with IDNR/OWR.
- ◆ The area building officials association, which may know of members available to help.

If there was a disaster declaration, check with the emergency manager. The floodplain administrator may be able to get temporary hires, with part of the cost reimbursed through disaster assistance.

Disaster assistance may also reimburse a community for inspectors to conduct habitability inspections and to determine if buildings are substantially damaged.