DEPARTMENT OF NATURAL RESOURCES

Minnesota Post-Flood Substantial Damage Playbook for Local Officials

June 2022

This packet serves as a quick reference to guide for local authorities in their post-disaster permitting responsibilities as required by the National Flood Insurance Program (NFIP).

Includes Information On:

- Steps in Processing a Building Permit for Damaged Buildings
- Substantial Damage and Substantial Improvement Determinations
- Sample Handouts, Letters, and Press Releases
- Community Responsibilities
- Information on Mitigation Programs & Strategies

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Abbreviations

BFE	Base Flood Elevation
DFIRM	Digital Flood Insurance Rate Map
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
HSEM	Homeland Security and Emergency Management (division in Minnesota Department of Public Safety)
HMGP	Hazard Mitigation Assistance Program
HVAC	Heating, Ventilation, and Air Conditioning
ICC	Increased Cost of Compliance
MDNR	Minnesota Department of Natural Resources
NFIP	National Flood Insurance Program
RFPE	Regulatory Flood Protection Elevation
SI	Substantial Improvement
SD	Substantial Damage
SFHA	Special Flood Hazard Area

Overview

A flood event is a chaotic time for a community, and something very few local staff and officials are prepared for. One responsibility that is often overlooked is the huge permitting demand by affected property owners. Communities that participate in the National Flood Insurance Program (NFIP) have a local floodplain management ordinance that regulates the FEMA mapped high risk floodplain (the 1% chance annual floodplain). Local official must ensure that any type of development, including repairs, reconstruction, or improvements, meet the ordinance requirements.

Key responsibilities include:

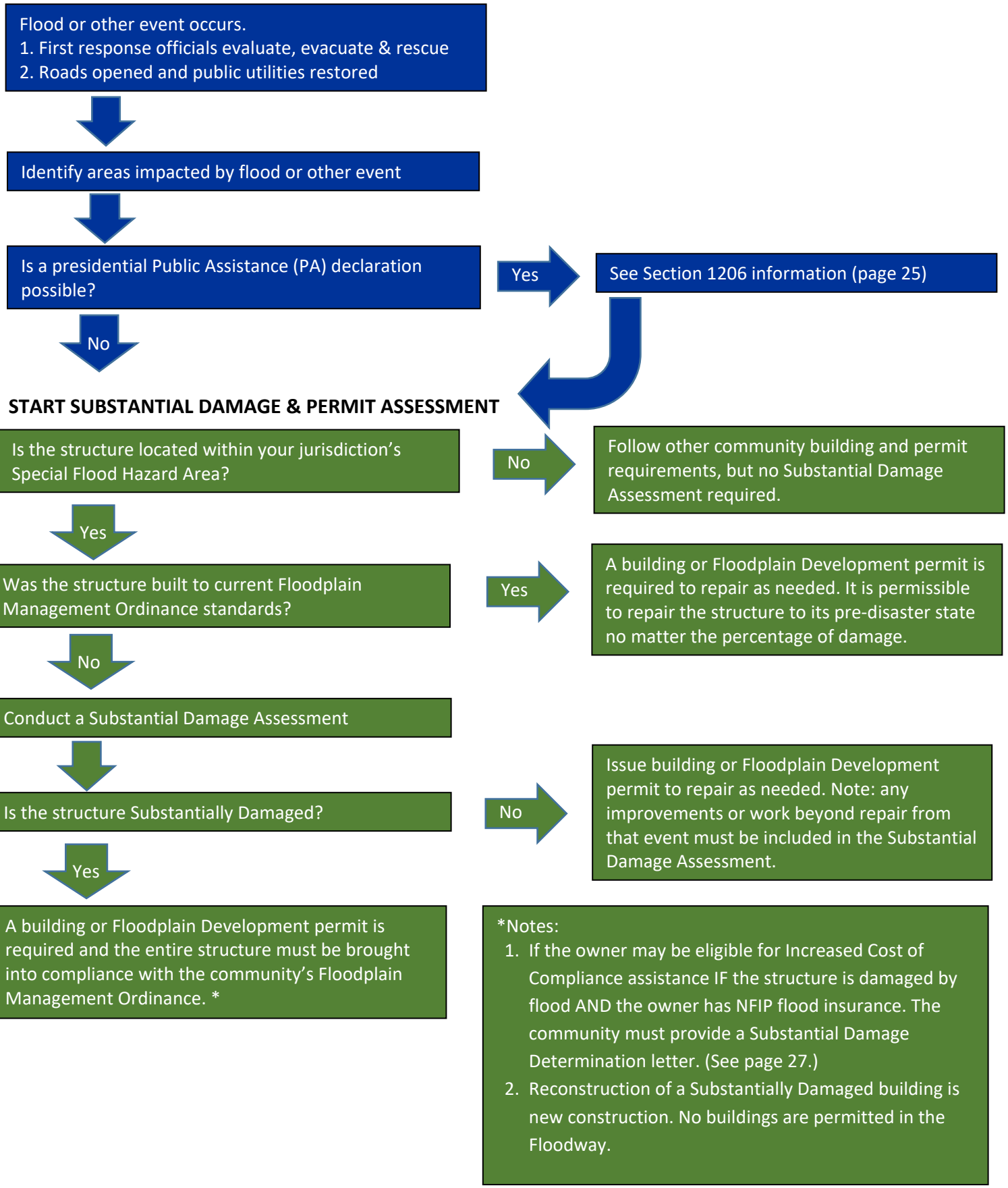
- Requiring a local permit for all development in the areas regulated by the local floodplain management ordinance), including repairs, reconstruction, or improvements.
- Conducting substantial damage determinations.

Carrying out these inspections and processing permits will typically be a highly coordinated effort requiring some level of advanced planning, so it is important to get a jump on the preparations.

This "playbook" is designed to help guide local officials through these post-flood permitting activities, and includes step-by-step instructions for conducting substantial damage determinations. In addition to the guidance provided in this packet, local officials should take full advantage of resources provided by the local Emergency Management Coordinator, Minnesota Homeland Security and Emergency Management (HSEM), Minnesota Department of Natural Resources (DNR), and the Federal Emergency Management Agency (FEMA). In the event of large-scale flooding, the State NFIP Coordinator and other DNR staff will participate, as requested, in public meetings to help guide and explain NFIP requirements.

Permits for the reconstruction of substantially damaged structures must stipulate that the structure be brought into compliance. The process of making a substantial damage determination requires careful documentation.

Overall Substantial Damage Assessment and Permit Requirement Flow Chart



Substantial Damage – "The 50% Rule"

Communities participating in the NFIP have adopted and are responsible for fully enforcing a local floodplain management ordinance. Under this ordinance, any new structure located in the 1% annual chance floodplain (also referred to as the State Flood Hazard Area (SFHA) or 100-year floodplain) must be elevated to or above the **Regulatory Flood Protection Elevation (RFPE)**. The same flood protection and elevation requirements also apply to existing nonconforming structures when they are substantially damaged.

Whenever a nonconforming structure located in the 1% annual chance floodplain is damaged from <u>any</u> source (flood, fire, seismic activity, wind, or human activity), the community <u>must</u> assess and determine if that structure is substantially damaged.

Rebuilding or repairing after a flood or other event provides an opportunity to make structures stronger and safer. The primary goal is to reduce loss from future floods.

Substantial damaged occurs when the cost of repairs is 50% or more of the structure's "pre-damaged" market value:

$$\textbf{Percent Damage} = \left(\frac{\textbf{Cost of Repair}}{\textbf{Pre} - \textbf{Damage Market Value}} \right) \textbf{x 100}$$

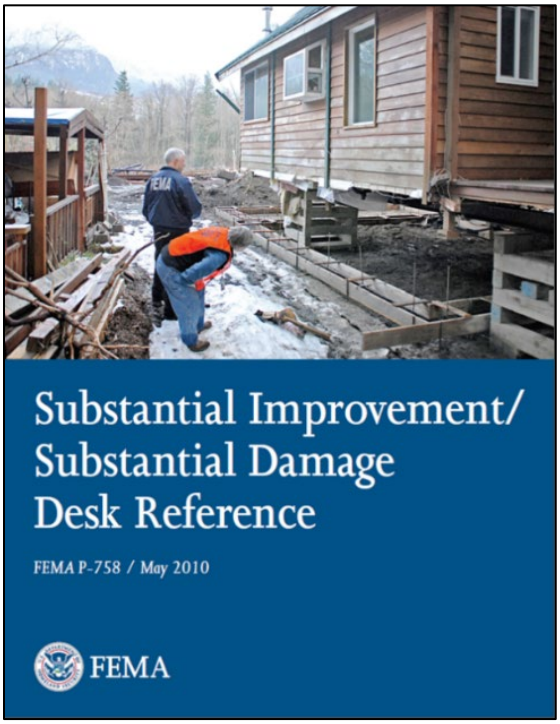
If the structure (based on definition in the ordinance - typically a building) is found to be substantially damaged, it must be brought into compliance with the community's floodplain management ordinance. Depending on the situation, full compliance could mean:

- Elevating the house above the regulatory flood protection elevation (RFPE),
- Moving the house out of the floodplain,
- Filling the portion of a basement or crawlspace that is below the RFPE and/or adding flood openings,
- Dry flood proofing, to make watertight (option for nonresidential structures only), or
- Demolition/buyouts.

Communities should not be afraid to encounter a substantially damaged structure, but rather see it as an opportunity. Damaged structures commonly become nuisances and the NFIP has a pool of funds available for all insured structures when they're determined to be substantially damaged. These funds, called **Increased Costs of Compliance (or ICC)**, are a rider on a flood insurance policy that provides up to $30,000 toward the costs of bringing a structure into compliance. ICC only has a limited window for eligibility, so it is important that damage determinations are done in a timely manner following a disaster. More information on ICC is available on page 27.

Does Your Ordinance Regulate Areas Beyond the 100-year floodplain?

If the community's floodplain ordinance regulates to the 0.2% annual chance floodplain, or to the horizontal extension of the RFPE, structures within these areas may also subject to substantial damage determinations. The nonconformities section of your ordinance may further detail the extent by which the substantial damage provsions apply, and whether any such exeptions would exist for areas outside the 1% annual chance floodplain..



One of the biggest public costs associated with the NFIP is insurance payments for structures that are repeatedly damaged. The substantial damage requirement is perhaps the most useful tool communities have to reduce the impacts of floods over time. Recognizing this, FEMA is increasingly focusing on community compliance during the post-disaster period. The permitting process, combined with enforcement of the substantial damage provision, provides an opportunity to prevent properties from becoming nuisances brought on from continuous damages.

While this playbook focuses on substantial damage, the methodology for making determinations also applies when tracking substantial improvements. The two are interrelated. Quite often, improvements are undertaken during reconstruction. More specific guidance for community responsibilities related to substantial damage (and substantial improvement) is provided in FEMA P-758 - Guidance from Substantial Improvement/Substantial Damage Desk Reference, May 2010, as well as the resources linked at the end of this document.

Step by Step Permitting Responsibilities of Local Officials Following a Flood Event or Disaster

The period immediately after a flood event is a chaotic and emotional time. Local officials are encouraged to develop a replicable and consistent standard operating procedure for permitting post-disaster work – from initial inventory of affected structures to the completion of Substantial Damage Assessments & Determinations.

Following a flood event or any disaster that affects structures in a floodplain, the local zoning administrator should follow some variation of the following steps:

Step 1: Contact the Minnesota Department of Natural Resources (DNR)

The State NFIP Coordinator and the DNR Area Hydrologist are available to disseminate training and guidance to the local zoning administrator or designees. For widespread flooding, the State NFIP Coordinator should have already contacted the zoning administrator, and may come to assist with mobilization. DNR staff can be reached at floodplain.dnr@state.mn.us.

Step 2: Finalize plans and delegate

Before the event is even over, local officials should familiarize themselves with the substantial damage process, reconstruction methods, and available mitigation programs. This packet provides guidance in developing a clear plan for carrying out inspections, substantial damage determinations and permitting.

The Minnesota Building Official Disaster Preparedness Manual categorizes the disaster process in four phases:

1. Preparedness
2. Damage Assessment
3. Recovery/Reconstruction
4. Mitigation

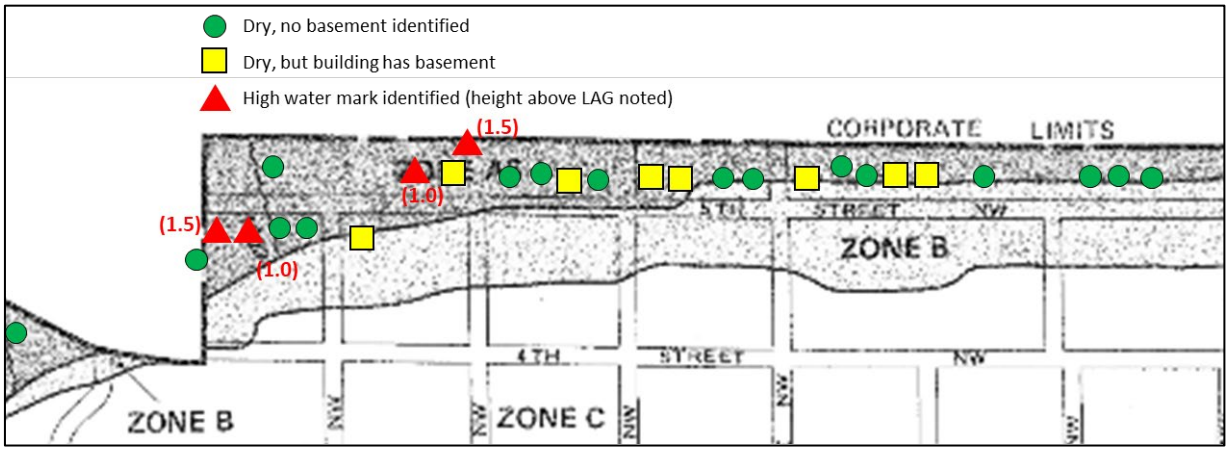
The guidelines in this Substantial Damage Playbook expand on Steps 2 & 3!

For severe events, it may be most beneficial for local officials to remain in the office in a coordinating role and designate a volunteer base to carry out damage assessments.

It is recommended that inspections be coordinated and carried out by building officials from outside of the community. Basing Substantial Damage Determinations on third party inspections has benefits, as it helps to avoid bias and softens potential resistance to the community. The Department of Labor and Industry works with the Association of Minnesota Building Officials to organize Disaster Preparedness Volunteers who can be made available on short notice. For larger events, FEMA or the state may dispatch assistance. Staff and volunteers should be provided with identification and handouts as they are out in the field carrying out their tasks.

Step 3: Inventory affected structures and distribute guidance to affected property owners

Identify potentially damaged structures on a map showing the 1% annual chance floodplain.



In this example of an initial inventory, only those structures located in the one-percent annual chance floodplain are evaluated (this community doesn't regulate Zone B areas).

Keep a photo log and inventory every impacted structure as soon as possible after the damage occurs. Photos should include any visible damages and should clearly identify a high water mark. If a high water mark is not visible on the exterior of the structure, check nearby accessory structures or fences, as these are not typically cleaned right away after a flood event. Screens and air conditioners also preserve these high water marks quite well. There will be a rush of applications to repair damages, and this initial inventory helps to streamline the process.

(Left) Monitoring cleanup is an easy way to verify which structures require an inspection.
(Right) Window wells indicate basements. Interior inspection should evaluate foundational damages

On all impacted buildings, post a *Notification for Damaged Structures* (page 23) form. Local officials and volunteers will encounter residents with questions, and this notice addresses many of those questions. They need to be aware of the post-flood inspection and permitting requirements, and the notice encourages residents to contact the zoning official as soon as possible to schedule an inspection. Consider also using social media and press releases to help communicate the requirements for inspections and applicable permitting requirements.

Be prepared for residents who are angry that they cannot start repairs immediately. Encourage them to obtain estimates from contractors as soon as possible, since estimates are needed for the permitting process to proceed. Estimates should address all structural damages observed during interior and exterior inspections. If a resident is on site, try to get a *Right of Entry* form signed and carry out the *Depth Damage Estimate* right away (as detailed Step 4 below).

Advise homeowners with structures covered by an NFIP flood insurance policy to contact their insurance companies.

Owners of insured buildings must submit *"Proof of Loss"* within 60 days of a flood event. Flood insurance – what it covers and what it doesn't provides a graphic representation of what is covered by a flood insurance policy. Advise those whose structures are substantially damaged of the additional funds available through ICC to help get the structure into compliance.

As you're making your rounds, make sure residents are aware of any and all options they have – both for mitigation programs and for guidance on reconstruction. Share information on federal or state disaster assistance programs, and guidance for retrofitting a flood prone structure. Many resources are available through the DNR's Flood Preparation, Response, and Recovery page.

Step 4: Conduct Depth Damage Estimates

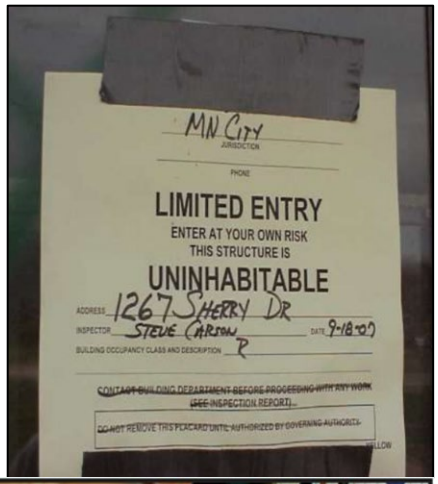
As soon as access is legally obtained, measure the depth of the flooding relative to the building's lowest floor, which will be needed for a Depth Damage Estimate. Lump each structure into one of three categories, using guidance provided on pages 11 to 12:

1) Structures with 0-30% losses,
2) Structures with 30-70% losses, or
3) Structures with 70-100% losses.

Depth Damage Estimates are **not** Substantial Damage Assessments. The focus of the Depth Damage Estimate should be on rapid data collection, primarily to assist with monitoring.

Categorizing these losses will be particularly useful for the more severe events. It can help to prioritize workload at a time when it's difficult to keep up with permitting demand. Though inspections and cost analysis would always be required for any type of repair, local officials may need to streamline the permit process for structures clearly less than 30% damage. This would better enable local officials to focus on the structures of highest concern.

During monitoring, local officials will encounter residents who begin their reconstruction efforts, and refuse to get a permit. One strategy to trigger action is to work with utility companies to turn off services to affected buildings, and only turn it back on when the property owner obtains a building permit. Local officials will also likely encounter displaced residents who refuse to leave their damaged homes while waiting for work to be completed. It will be important to refer to building code requirements for these decisions. Buildings unsafe to enter should be red-tagged. FEMA has recently published guidance for determining habitability in P-2055 – Post-disaster Building Safety Evaluation Guidance – Report on the Current State of Practice, including Recommendations Related to Structural and Nonstructural Safety and Habitability, November 2019.



(Top) Structures with losses >70% are likely uninhabitable, and should be "red-tagged." (Bottom) Obtain access to every damaged structure and document losses, including high-water marks.

Step 5: Conduct Substantial Damage Assessments and Determinations

This step can be easily broken out by four separate sub-steps:

- Inspect the interior and exterior of each structure using the *Damage Assessment Worksheet* (see pages 18 to 21)
- Estimate cost to restore structure to its pre-damaged condition
- Determine the pre-damage market value of the structure
- Substantial Damage Determination. Complete a Substantial Damage Determination Letter (see example, page 22)

To the greatest extent possible, local officials should coordinate all scheduling of interior inspections with other interested parties – HSEM, FEMA, insurance adjusters, or the County Assessor's office. To make a Determination, the local official will need to cross reference the damages observed in the Substantial Damage Assessment with the itemized contractor's estimate provided by the property owner. These won't always align. Be prepared for disagreements between your permit office and the property owner over the total list of needed repairs and their cost. Property owners have a great incentive to show less damage than actually occurred in order to avoid the cost of bringing the structure into compliance. Local governments may choose to implement a procedure for appealing a Substantial Damage Determination if one does not currently exist.

The formal determination comes in the form of a Substantial Damage Determination Letter. The property owner will need this letter to obtain a permit, make an insurance claim, or make ICC funds available. Additional details for conducting Substantial Damage Assessments and Determinations can be found on pages 13 to 15.

Step 6: Process Permits

Local officials may encounter signs of damaged structures which weren't initially inventoried. These homeowners should be notified that their repair work is subject to a permit, and must be inspected for Substantial Damage Determination.

Local officials should not issue permits until a Substantial Damage Determination is made and compliance with the local floodplain ordinance is demonstrated and documented. Local officials should work with the applicants to complete the permit application form.

If your community enforces repetitive losses or other cumulative substantial damage provisions in their ordinance, it would be advisable to verify whether there are any past damages which may influence the Substantial Damage Determination. More on cumulative damages is detailed on pages 16 to 17.

Initial Inventory - Depth Damage Estimates

Soon after an event, a community is encouraged to categorize the affected structures based on percent damaged. This allows the local official to give targeted guidance to affected property owners, and to prioritize those most affected for assistance and monitoring. As soon as access can be legally obtained through a signed *Right of Entry* (see sample agreement, page 24), each affected building should get an Initial Depth Damage Estimate. If the property owner is on-site, it might be easiest to carry this out when doing an initial inventory of affected buildings, when guidance is being distributed.

Categories and guidance could take some variation of the following:

- **0-30%:** A Substantial Damage Determination is still required, but can be streamlined. If the community is facing heavy losses, overburdened, and having difficulty keeping up with permitting demand, the zoning administrator may streamline the permitting process for these structures. These structures can be considered habitable.
- **30-70%:** Local officials should concentrate their efforts on these structures. All will require an inspection to carry out a detailed Substantial Damage Assessment & Determination. Property owners should be advised to obtain contractor estimates as soon as possible to complete the determination. A permit to rebuild can only be issued when it can be verified that a structure is not substantially damaged.
- **70-100%:** These structures are most likely substantially damaged, and should be flagged as uninhabitable. These structures will require a formal Substantial Damage Determination from the local official before any reconstruction or demolition work can be carried out. This formal determination will be needed for flood insurance claims.

Depth Damage Estimates are an easy to use method to give a rough estimate of flood damages, but they are not a substitute for the full Substantial Damage Determination. The figures in Table 1 below are based upon the USACE Depth Damage Relationships Report completed in 2006. A few clarifications on this methodology:

1. **The USACE Depth Damage methodology does not accommodate for basements** (structures with the lowest floor below ground level on all four sides). It is generally assumed that flooding confined to the basement will result in damages less than the 30% threshold. Inspection would still be required.
2. The **Flood Depth** refers to the level of the flood water in relation to the lowest floor. For the purposes of this assessment, a walkout would not be considered a basement.
3. Round the depths to the nearest half foot.
4. There are situations confronted where depth alone may not tell the whole story. For instance, if the floodwaters are restricted to the basement, but there is major foundational damage, the property should be flagged for continued monitoring and a detailed inspection.
5. Though apartment buildings house residents, they are owned as businesses and are considered non-residential for the purposes of the depth damage estimate.

Depth damage estimates should be carried out soon after the flood, when high water marks are still visible. This provides a good indicator of the structures likely to be substantially damaged. All structures with damages require a full substantial damage assessment, but those with damages estimated to be above 30% should be carefully monitored to ensure all work is properly permitted.

Table 1. Depth Damage Estimates for Preliminary Assessments of Flood Damages. Highlighted cells are our highest priorities for damage assessments.

Flood Depth (ft)	One-story on slab	Two-story on slab	Nonresidential – Masonry Frame	Nonresidential – Wood/Steel Frame	Mobile or Manufactured Home
<0.0	≤1%	0%	≤1%	0.0%	<13%
0.0	9.8%	5.9%	0.6%	0.0%	34.5%
0.5	31.1%	19.1%	13.6%	27.3%	62.3%
1.0	37.7%	25.3%	17.6%	31.8%	64.1%
1.5	41.4%	26.0%	20.3%	34.4%	66.2%
2.0	44.6%	30.1%	22.3%	36.8%	68.9%
3.0	50.0%	32.1%	24.8%	38.4%	71.6%
4.0	62.3%	43.0%	29.2%	45.6%	74.7%
5.0	67.0%	46.9%	29.5%	48.0%	79.8%
6.0	69.4%	47.5%	31.6%	50.2%	80.4%
7.0	69.8%	47.6%	33.2%	52.7%	81.7%
8.0	74.9%	52.0%	41.7%	59.7%	94.0%
9.0	80.7%	61.9%	48.6%	62.6%	94.3%
10.0	81.4%	64.3%	51.4%	65.3%	95.4%
11.0	81.5%	65.7%	54.0%	65.5%	95.4%
12.0	81.5%	67.6%	56.8%	67.2%	95.4%
13.0	82.0%	69.6%	57.0%	67.3%	95.4%
14.0	82.0%	69.6%	58.3%	67.5%	95.4%
15.0	82.0%	70.4%	58.4%	67.8%	95.4%

As your community is carrying out Depth Damage Estimates, it is recommended to keep a spreadsheet of some sort to document the damages observed. In the example in Table 2 below, 234 Spruce Street and 567 Larch Lane both have flood levels that indicate they may be substantially damaged. These structures should be prioritized for an in-person inspection.

Table 2. Sample Inventory Methodology for Preliminary Damage Assessments

Address	Date of Inspection	Type of Structure	Foundation Type	Flood Depth (nearest 0.5')	Preliminary Damage Assessment (Per Depth Damage Chart)	Other obvious damages
123 Sycamore Street	4/1/2020	House - 1 story	On slab	0.5'	**31.1%**	No
234 Spruce Street	4/1/2020	House - 1 story	Basement	0.5'	**31.1%**	No
345 Ash Avenue	4/1/2020	House - 1 story	Basement	<0.0’	< 30%	No
456 Birch Boulevard	4/1/2020	House - 1 story	On blocks above grade	0.0’	<1%	No
567 Larch Lane	4/1/2020	Manufactured Home	On blocks above grade	0.5'	**62.3%**	No
678 Catalpa Court	4/1/2020	Commercial - Masonry	On slab	4.0'	29.2%	No

SUBSTANTIAL DAMAGE ASSESSMENTS & DETERMINATIONS

The Substantial Damage Assessment is a process consisting of inventory, inspections, and information gathering that ultimately leads to a Determination. All must be completed prior to the issuance of a permit. The major tasks include:

1. Inspection of all damages using the Damage Assessment Worksheet;
2. Estimate cost to restore structure to its pre-damaged condition;
3. Determine the pre-damage market value; and
4. Make Substantial Damage Determination by completing a Determination Letter.

Though this packet promotes the use of a certain methodology, there is no single method for conducting a Substantial Damage Assessment. Though there is a significant learning curve, FEMA's Substantial Damage Estimator (SDE) Software provides an objective and replicable method for making damage determinations. Ideally, this tool works best when the local official is trained on the program ahead of time, and has inventoried all vulnerable structures prior to the event. One of the primary benefits of the SDE software is its ability to provide impartial and objective cost estimates when contractors estimates cannot be obtained.

Gain Entry and Complete Damage Assessment Worksheet

During inspection, the local official (or designee) will inspect the home and document all of the needed repairs to restore the structure back to its pre-damaged condition. Local officials should use the *Sample Damage Assessment Worksheet* (see pages 18 to 21) to document the damages observed.

All local officials and designees should be prepared to show identification when talking with homeowners.

Obtain and Evaluate Cost Estimate

The affected property owner should furnish a contractor's estimate detailing itemized repairs that address all of the damages identified during the assessment. The cost of repairs must be calculated to reflect all costs to get the structure back to its "pre-damaged" condition – even if the owner elects to do less. The total cost of repair includes materials and labor. Costs should be provided by a credible source like a licensed builder, engineer, architect, or contractor. A detailed breakdown of costs to include is provided below on pages 14 to 15.

The zoning administrator may be required to determine cost estimates when they aren't provided. Ideally, this is done through an industry-accepted cost guide, adjusted for local conditions. Other times when the zoning administrator may be required to determine cost estimates include:

- The property owner is proposing to use volunteer labor and donated or discounted building materials;
- The property owner is proposing to carry out repairs less than what was actually sustained. The local official would be required to make a determination of the total costs to restore it to its pre-damaged condition; or
- There are a large number of damaged buildings in a community. In certain cases, a community official cannot keep up with permitting demands and is forced to make informed cost estimates.

Quite often, when a contractor is on site, the building owner will add on work that goes beyond restoration. For the purposes of estimating costs, all associated repairs, rehabilitation, additions, and even maintenance carried out as part of the restoration must all be included in the cost estimate. As such, there is no need for the local official to break down what is a repair, maintenance, or improvements. It should all be factored in. For example, if a home had previously experienced 30% damages, the homeowner would not be able to propose any improvements beyond 19% of the structure's pre-damage market value. Any more would exceed the 50% threshold.

Estimate Market Value

Market value must be determined for the affected structure. Land, exterior improvements, and other structures on site are excluded. The easiest, most widely-used, and consistent method to estimate the structure's market value is by using the assessed value, and then applying an adjusted ratio to determine market value. The zoning administrator will need to work with the County Assessor to find a mathematically correct assessment ratio, and ensure that the assessed value used is just for the building itself – not the adjoining deck, pool, landscaping, or accessory structures.

Other replicable and acceptable methods of estimating market value may include:

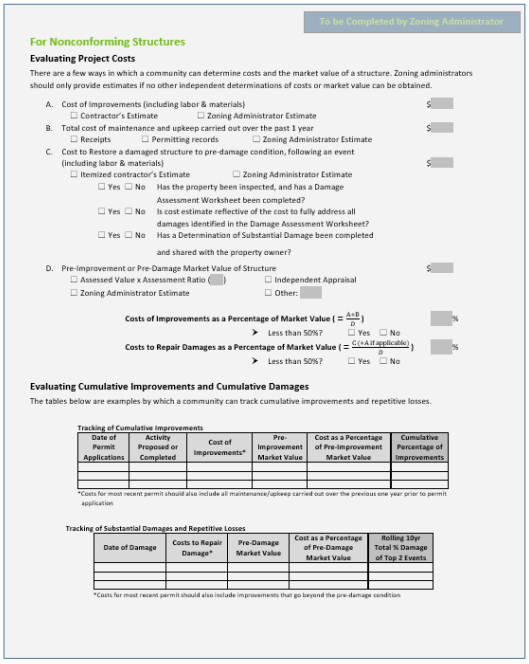
- Independent appraisals by a professional appraiser;
- Detailed estimates of the structure's Actual Cash Value (replacement cost minus depreciation);
- Qualified estimates based on professional judgment made by staff; or
- Contractor cost estimate for a new structure of similar type, size, and construction.

Note: Property owners are free to challenge the market value determination by obtaining an independent appraisal.

Make Substantial Damage Determinations

The zoning administrator will need to compare the cost estimate to the market value of the structure to make the Substantial Damage Determination. When a structure is determined to be Substantially Damaged, the zoning administrator will have to provide a Substantial Damage Determination Letter (see page 22). The property owner will need this letter to make an insurance claim or utilize ICC funds to help with mitigation. If a structure is not substantially damaged, a formal letter is not required, but should at minimum be communicated to the property owner on the permit application form.

If the community has adopted a cumulative substantial damage or repetitive loss provision, local officials should verify the details in their ordinance and cross-reference past damages which may influence the determination (for more details, see pages 16 to 17).



To be Completed by Zoning Administrator

For Nonconforming Structures

Evaluating Project Costs

There are a few ways in which a community can determine costs and the market value of a structure. Zoning administrators should only provide estimates if no other independent determinations of costs or market value can be obtained.

A. Cost of improvements (including labor & materials) $
☐ Contractor's Estimate ☐ Zoning Administrator Estimate

B. Total cost of maintenance and upkeep carried out over the past 1 year $
☐ Receipts ☐ Permitting records ☐ Zoning Administrator Estimate

C. Cost to Restore a damaged structure to pre-damage condition, following an event (including labor & materials) $
☐ Itemized contractor's Estimate ☐ Zoning Administrator Estimate
☐ Yes ☐ No Has the property been inspected, and has a Damage Assessment Worksheet been completed?
☐ Yes ☐ No Is cost estimate reflective of the cost to fully address all damages identified in the Damage Assessment Worksheet?
☐ Yes ☐ No Has a Determination of Substantial Damage been completed and shared with the property owner?

D. Pre-improvement or Pre-Damage Market Value of Structure $
☐ Assessed Value x Assessment Ratio ( )
☐ Independent Appraisal
☐ Zoning Administrator Estimate
☐ Other:

Costs of Improvements as a Percentage of Market Value ($= \frac{A+B}{D}$) %
➢ Less than 50%? ☐ Yes ☐ No

Costs to Repair Damages as a Percentage of Market Value ($= \frac{C_{(+A \text{ if applicable})}}{D}$) %
➢ Less than 50%? ☐ Yes ☐ No

Evaluating Cumulative Improvements and Cumulative Damages

The tables below are examples by which a community can track cumulative improvements and repetitive losses.

Tracking of Cumulative Improvements

Date of Permit Applications	Activity Proposed or Completed	Cost of Improvements*	Pre-Improvement Market Value	Cost as a Percentage of Pre-Improvement Market Value	Cumulative Percentage of Improvements

*Costs for most recent permit should also include all maintenance/upkeep carried out over the previous one year prior to permit application

Tracking of Substantial Damages and Repetitive Losses

Date of Damage	Costs to Repair Damage*	Pre-Damage Market Value	Cost as a Percentage of Pre-Damage Market Value	Rolling 10yr Total % Damage of Top 2 Events

*Costs for most recent permit should also include improvements that go beyond the pre-damage condition

The DNR's Sample Floodplain Permit Application Form includes a page documenting the determination

Costs That Must Be Included in the Detailed Cost Estimate:

- Materials and labor, including the estimated value of donated or discounted materials and volunteer labor.
- Site preparation related to the improvement or repair (e.g., foundation excavation or filling in basements).
- Demolition and construction debris disposal related to removing structure walls, floors, etc. This should **NOT** include cleanup or disposal of contents.
- Labor and other costs associated with demolition, moving or altering of the structure to accommodate improvement, additions and making repairs.
- Costs associated with maintaining compliance with other codes or regulations, including the Americans with Disabilities Act (ADA).
- Costs associated with elevating a structure when the proposed elevation is lower than the BFE.
- Construction management and supervision.
- Contractor's overhead and profit.
- Sales tax on materials.

- Structure Elements and exterior finishes, including:
  - Foundations (e.g., spread or continuous foundation footings, perimeter walls, chain walls, pilings, columns, posts, etc.)
  - Monolithic or other types of concrete slabs
  - Bearing walls, tie beams, trusses
  - Joists, beams, subflooring, framing, ceilings, Interior non-bear walls
  - Exterior finishes (e.g. brick, stucco, siding , painting, and trim)
  - Windows and exterior doors
  - Roofing, gutters and downspouts
  - Hardware
  - Attached decks and porches

- Interior Finish Elements, including
  - Floor finishes (e.g., hardwood, ceramic, vinyl, linoleum, stone, and wall-to-wall carpet)
  - Bathroom tiling and fixtures
  - Wall finishes (e.g., drywall, paint, stucco, plaster, paneling, and marble)
  - Interior finish carpentry
  - Built-in cabinets (e.g., kitchen, utility, entertainment, storage, and bathroom)
  - Interior doors
  - Built-in bookcases and furniture
  - Hardware
  - Insulation

- Utility and service equipment, including
  - Heating, ventilation, and air conditioning (HVAC) equipment
  - Plumbing fixtures and piping
  - Electrical wiring, outlets, and switches
  - Light fixtures and ceiling fans
  - Security systems
  - Built-in appliances
  - Central vacuum systems
  - Water filtration, conditioning, and recirculation systems

Costs That Should Be Excluded From the Detailed Cost Estimate:

- Clean-up and trash removal; (e.g., cost of draining a basement, removing dirt and mud, and cleaning buildings)
- Costs to temporarily stabilize a building so that it is safe to enter to evaluate and identify required repairs
- Costs to obtain or prepare plans and specifications
- Land survey costs
- Permit fees and inspection fees
- Carpeting and re-carpeting installed over finished flooring such as wood or tile
- Outside improvements, including landscaping, irrigation, sidewalks, driveways, fences, yard lights, swimming pools, pool enclosures, and detached accessory structures (e.g., garages, sheds, and gazebos)
- Costs required to correct existing violations of health, safety, and sanitary codes
- Plug-in appliances such as washing machines, dryers, and stoves

TRACKING OF CUMULATIVE DAMAGES & IMPROVEMENTS

Tracking damages and improvements cumulatively over time is a very useful way for a community to achieve long-term reduction of flood losses.

There are a few different ways in which communities have chosen to go beyond the minimum federal standards to regulate substantial damages or substantial improvements. It is very important that communities fully understand how their ordinance regulates this. The recommended methodology for tracking described below is consistent with the recommended standards in Minnesota's Model Floodplain Ordinance and Permit Application Form.

Since the 1970s, Minnesota's Model Floodplain Ordinance has contained recommended higher standards related to cumulative tracking of damages and improvements. If your ordinance uses the language in the model ordinance, you are regulating cumulative substantial damages through a repetitive loss definition, and tracking cumulative improvements over the life of the structure.

Enforcing a Cumulative Damages Provision

Under the minimum federal standards, a structure is substantially damaged when the cost of repairs equals 50% or more of the structure's "pre-damage" market value. The determination is made based on a single event. Under the minimum federal standards, a structure could experience multiple damages for different events - with each damage under 50% of the pre-damaged market value. If insured, the homeowner would continue to make flood insurance claims, but never be compelled to bring the structure into compliance. Unfortunately, this is a common issue with the National Flood Insurance Program and one of the biggest reasons the program runs on such a significant deficit.

There are a variety of different ways a community could go above and beyond the minimum federal standards for substantial damage determinations. It is broadly recommended that communities adopt some variation of a repetitive loss provision to address structures which get damaged over and over again. The state's model floodplain ordinance includes a repetitive loss provision as a recommended higher standard, and most Minnesota communities have adopted this recommended language. Under the definition for repetitive loss in the state's model ordinance, when a structure sustains two flood damages over a ten year period where the average of the damages equals or exceeds 25% of the pre-damage market value of the structure, it would be considered a repetitive loss property and substantially damaged. If tracking damages over time, a local official's spreadsheet for a structure may resemble something similar to Table 3.

Table 3. Recommended tracking spreadsheet for a community that regulates repetitive losses

Date of Damage	Costs to Repair Damage*	Pre-Damage Market Value	Cost as a Percentage of Pre-Damage Market Value	Rolling 10yr Total % Damage of Top 2 Events
April 1997	$40,000	$84,000	47.6%	47.6%
May 2009	$21,400	$105,000	20.4%	20.4%
Aug 2010	$18,800	$100,000	18.8%	39.2%
April 2019	$50,400	$150,000	33.6%	**54.0%**

*When cumulatively tracking damages, improvement costs for structures restored beyond the pre-damage condition should also be included in the cost estimate for the current event.

In this example, the documentation shows two flood damages over a ten year period where the average of the damages exceeded 25% of the pre-damage market value of the structure (the 2009 and 2019 events). As such, this would qualify as a repetitive loss and would be considered substantially damaged. The zoning administrator should make an official substantial damage determination, and work with the property owner to get the structure into compliance.

Note that for buildings being restored beyond their pre-damaged condition, the cost estimate for the most recent event shall also include any associated improvements costs.

Enforcing a Cumulative Improvements Provision

Under the minimum federal standards for improvements to nonconforming structures in the floodplain, an owner is prohibited from making improvements that exceed 50% of the pre-improvement market value of the building within any given year. The rationale behind a cumulative improvements standard is to limit the financial investments that are put into vulnerable structures. The higher the value of a structure, the more expensive an insurance policy will become, and the more expensive it will be to rebuild the structure in compliance at some point down the road. However, an issue

with the minimum federal standard for improvements, is that a structure could undergo subsequent improvements year after year. A building owner could theoretically improve their structure by 49% every year, which goes against the intent of the provision.

Most communities in Minnesota have adopted the standard recommended in the state's model ordinance, which limits improvements over the life of the structure – or the time period since the community had adopted the standard. In the case of improvements, a local official's tracking spreadsheet may resemble something similar to Table 4.

Table 4. Recommended tracking spreadsheet for a community that regulates cumulative improvements

Date of Permit Applications	Activity Proposed or Completed	Cost of Improvements*	Pre-Improvement Market Value	Cost as a Percentage of Pre-Improvement Market Value	Cumulative Percentage of Improvements
Sept 2003	Electrical Upgrade	$10,000	$100,000	10%	10.0%
Aug 2010	New rear deck	$8,600	$100,000	8.6%	18.6%
July 2018	Vertical addition + new furnace	$45,000	$147,000	30.6%	**49.2%**

*When cumulatively tracking improvements, the costs for most recent permit should also include all maintenance/upkeep carried out over the previous one year prior to the date of the permit application

In this example, the structure has obtained three permits, and is just barely under the 50% threshold. This permit application can be approved, but this house will not be eligible for any other significant improvements.

While the state's model ordinance limits improvements over the life of the structure, other variations of this higher standard can be considered:

- Lowering the 50% threshold
- Reducing the time period when the improvements are evaluated to a rolling 5-, 10-, or 15-year period
- Applying both damages and improvements to the cumulative 50% calculation

Appendix

Sample Damage Assessment Worksheet

Worksheet for internal documentation. Local official should follow the steps below:

1. **Local official completes inspection**
2. **Upon receiving cost estimates, local official must verify the cost estimate is addressing all damages identified during the inspection. Then, complete the *Determination of Substantial Damage* section**
3. **Send *Sample Determination Letter* prior to, or along with, the permit**

Building Address: _____

Owner: _____

Owner Mailing Address: _____

Telephone Number: _____

Occupant: _____

Telephone Number _____

Insurance Coverage (Optional):

Policy Holder _____

Company _____ Policy Number: _____

Building: $ _____ Contents: $ _____

Special Flood Hazard Area:

Community I.D. #: _____

FIRM Panel: _____ FIRM Date: _____

Flood zone: _____ Base Flood Elevation _____

Existing Lowest Floor Elevation: _____ Datum _____ (if available)

Cause of Damage: Flood _____ Fire _____ Wind _____ Other _____

Duration of Flooding: Days _____ Hours _____

High Water Mark:

A. Exterior Walls _____ ft.
B. Interior Walls _____ ft.

Describe Location of High Water Mark:

_____

_____

Description of Structure:

1. Single Family _____ Multi-Family _____ Mobile/Manufactured Home ____
   Mixed Use/Commercial (specify use) _____

2. 1 story _____ 2 or more stories _____ Split Level _____
3. Garage: attached _____ detached _____

4. Number of bathrooms: _____

5. Year of Construction _____

6. Exterior:
   a. Wood Frame & Stucco ____
   b. Wood Frame & Siding/Shingles ____
   c. Brick superstructure (not brick veneer) ____
   d. Other (describe) ____

7. Foundation
   a. Slab-on-grade _____
   b. Continuous wall with slab _____
   c. Crawlspace or basement _____ (Finished ____ Unfinished ____)
   d. Lowest Floor above grade _____ (Flood openings? Yes ___ No ___)
      i. Vented Block walls _____
      ii. Post or piers _____
      iii. Other (describe) _____

8. Heating and Cooling:
   a. Description of Type _____
   b. Location _____

9. Plumbing: _____

10. Built In Appliances, Sprinklers, Elevator

    List: _____

Description of Damage:

1. **Plumbing:**
   Depth of inundation of water heater _____
   Extent of sewer backups (if applicable) _____
   Contamination of septic system? _____
   Does it need repair? _____

2. HVAC/Electrical
   Depth of inundation of furnace _____
   Was HVAC compressor inundated >12 inches, or are there signs of damage? _____
   Were heating/cooling ducts inundated? _____
   Were electrical systems inundated? _____
   Are there signs of damage, corrosion or inoperability? _____

3. Use corresponding numbers given for each item below:
   1. Settlement/cracked
   2. Partially missing
   3. Sagging
   4. Dislodged/destroyed
   5. Submerged
   6. Include all the above
   7. No damage

Foundation	_____	Cabinets/Counters	_____
Exterior Walls	_____	Appliances	_____
Interior Walls	_____	Flooring	_____
Roof	_____	Doors/Windows	_____

4. Describe Observable Damage (attributable to the disaster event):
   _____
   _____
   _____

Overall condition of structure:

1. Inundation only _____
2. Minor structural damage _____
3. Major structural damage _____
4. Totally destroyed _____
5. Structure off foundation _____

Name of Inspector: _____

Pictures of Damages & High Water Mark

Description	**Description**
Description	**Description**

Sample Substantial Damage Determination Letter

This letter serves as formal notification that a structure is determined to be Substantially Damaged. The property owner will need this Damage Determination Letter to make an insurance claim, or make ICC funds available. This letter should accompany the Damage Assessment Worksheet. If your community is enforcing a repetitive loss or other cumulative damages provision, those damages should be considered for the purposes of a Determination, and this letter should reflect that.

September 22, 2021

John & Jane Q. Public
1234 Flooded-By-The-River Road
Floodville, MN 61000

RE: Notice of Substantial Damage Determination, 1234 Flooded-By-The-River Road

Dear Mr. and Mrs. Public,

Subsequent to the recent flooding event, a damage assessment has been completed on the property referenced above. The City has determined that your structure received damages exceeding 50% of the pre-damage market value of the structure as a result of the flooding that occurred on September 3rd and 4th, 2021.

Flood Zone:	Zone AE
Market Value:	$131,226
Flood Damage:	
June 2015	**$79,260**
Total damages	$79,260
Percent Damaged:	60.4%

Under the requirements of the City of Floodville's Floodplain Management Ordinance, structures located within the high-risk floodplain that receive damage of any origin, whereby the cost of restoring the structure would equal or exceed 50% of the structure value, must be brought into compliance with the ordinance prior to re-occupation. Structures with more than 50% damage must either be removed from the floodplain, demolished, or have the lowest floor (including basement) elevated to at or above the Regulatory Flood Protection Elevation (RFPE). Failure to comply with this requirement will result in daily fines and/or legal action by the City against the owner of the structure.

For structures covered under a National Flood Insurance Program (NFIP) policy, the Increased Cost of Compliance (ICC) program may provide additional financial assistance to either elevate or remove flood-damaged structures from the floodplain. ICC applies to structures that are substantially damaged.

Be advised that all repairs, reconstruction and new construction are subject to the provisions of the City's Building Code and will require a permit. Construction activities that occur without a proper permit are considered to be non-compliant and may result in daily fines and/or the removal of the non-compliant construction.

Members of our Department are prepared to meet with you at our office to discuss the substantial damage determination process and to provide guidance for reconstruction or repair of your structure. To schedule a meeting or discuss questions regarding this determination, please contact me or [floodplain administrator] of the Department of Building Inspections at 708-852-XXXX between the hours of 7:30 AM and 5:00 PM, Monday through Friday.

Sincerely,

(**Your Name and title**)

Sample Notification for Damaged Structures

Handout should be distributed to all affected residents as soon as possible following a flood event.

RE: Information Regarding Cleanup of Damaged Structures within the Floodplain

[community name] is requesting your cooperation to expedite the recovery of our community. As you may be aware, the National Flood Insurance Program (NFIP) has regulatory requirements for damaged buildings that have a lowest floor below what is required by local ordinance. These requirements may affect how you repair, reconstruct, or remodel the building. To meet this requirement, a local official is required to conduct an inspection and ultimately determine whether the structure is more than 50% damaged (substantially damaged) before rebuilding efforts can commence.

We ask that you allow our staff, or designee working on our behalf, to access and inspect your damaged building. Inspections are required to assess the damage and verify the extent of work required to repair the building to its pre-damage condition – both for permitting and for determining eligibility for FEMA individual assistance aid. Please contact our office (**xxx- xxx-xxxx**) to schedule an inspection as soon as possible. Authorized staff will carry identification and will share a "right of entry" authorization form prior to access.

You may proceed with cleanup activities and temporary emergency repairs to prevent further deterioration, such as preventing the spread of mold and/or mildew, without a permit. This would include:

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

An inspection is required prior to the repair, alteration, or replacement any of the following items:

- Roof
- Walls
- Siding
- Plaster
- Cabinets
- Flooring
- Electrical systems
- Plumbing
- Heating
- A/C units
- Foundation

If you have damage to any of the items identified above, it is recommended that you obtain cost estimates from a licensed contractor right away. These detailed cost estimates will be required by the local zoning official to complete a Substantial Damage Determination. The Zoning Administrator **MUST** be able to verify your building is not substantially damaged before a permit can be issued. Failure to obtain reconstruction approval and permit may result in daily fines and/or the removal of the non-compliant construction.

Prior to proceeding with cleanup activities, it is recommended that you thoroughly document the condition of the building yourself by photographing the inside and outside of all affected areas, and document all costs associated with the cleanup/emergency repairs.

If your structure is covered by a flood insurance policy, it is recommended that you contact your insurance company immediately. Insurance companies will assign adjusters to inspect and prepare claim documentation within four weeks of the flood. Owners of insured buildings must submit "Proof of Loss" within 60 days of a flood event.

We understand that once contractors get onsite, some homeowners will be tempted to make improvements beyond the damages sustained. Homeowners should be advised that the costlier the structure becomes, the more expensive the policy will become, and the more expensive it will be to rebuild should it flood again in the future.

We are deeply sorry for your loss and will try to streamline the permit process as much as we are able. If you have any concerns, questions, or won't be present on site to accommodate an inspection, please give me a call: (**xxx- xxx-xxxx**).

Sincerely,

(**Your Name and title**)

Sample Right of Entry Form

This release should be obtained from all property owners of buildings needing Substantial Damage Determinations. Local officials should try to get these releases signed as soon as possible after an event. Ideally, this can get signed when out distributing the Notification for Damaged Structures. Otherwise, they will need to be obtained before the depth damage estimates are completed.

PROPERTY OWNER'S RIGHT OF ENTRY CERTIFICATION AND RELEASE

A floodplain permit is required for all construction activity within the high-risk floodplain, as provided under the (**community's name)** floodplain ordinance. This includes construction for new or improved structures, filling, and excavation. The National Flood Insurance Program (NFIP) requires the completion of a Substantial Damage Determination (according to Title 44 CFR, Section 60.3) prior to the issuance of any permit for repair.

I, the undersigned, being the owner of the land and all structures located at _____, do hereby grant the community of (**community's name)** permission to inspect the property to determine the amount of damage and to comply with the National Flood Insurance (NFIP) Regulations for Substantial Damage Determinations.

I, the undersigned, do hereby grant the community of (**community's name)**, its agents, servants, employees and assigns, for a period of 60 days or the completion of the substantial damage assessment, from the date of this document, permission to enter upon the above identified land to carry out this assessment. Construction activities that occur without a proper permit are considered to be non-compliant and may result in daily fines and/or the removal of the non-compliant construction.

I, the undersigned, do hereby release and forever discharge the (**community's name)**, its agents, servants, employees and assigns from any and all claims, demands, or actions for damages for any and all personal injuries, or loss or damage to property sustained in or growing out of said inspections, and from complications arising therefrom.

It is understood that the above mentioned Substantial Damage Assessment and the terms of the release are fully understood and voluntarily accepted.

_____
Date

_____
Signature

Disaster Recovery Reform Act of 201, Section 1206 Funding

The "Building Code and Floodplain Management Administration and Enforcement" policy (FEMA Policy FP 204-079-01) will help governments speed the overall recover from a disaster by providing resources to ensure compliance with codes and floodplain management for up to 180 days following a major disaster declaration, i.e., when there has been a presidential Public Assistance (PA) declaration.

This policy is a result of the Disaster Recovery Reform Act (DRRA) of 2018, Section 1206. This policy applies to all major disaster declarations declared on or after Aug. 1, 2017.

For the first 180 days following a major disaster declaration, the policy can provide funding for:

- Hiring and training staff to conduct activities.
- Reviewing and processing building permits and occupancy and compliance certificates.
- Conducting building inspections.
- Reviewing disaster-related development in the floodplain.
- Providing education services to the public on floodplain requirements.

Eligible Costs Highlights

- Funded at the Permanent Work cost-share for the disaster.
- FEMA will not extend assistance beyond 180 days from the disaster declaration date.
- Only overtime for budgeted employees, but straight-time & overtime for extra hires.
- Costs associated with reimbursement for mutual aid or Emergency Management Assistance Compact (EMAC).

For more information:
See FEMA's Section 1206 | Building Code and Floodplain Management Administration and Enforcement page.

- FEMA video (less than 7 minutes) Disaster Recovery Reform Act (CRRA) Section 1206 funding
- Volume 1: Disaster Recovery Reform Act Section 1206 Frequently Asked Questions
- Volume 2: Disaster Recovery Reform Act Section 1206 Frequently Asked Questions

Funding for Post-Disaster Repairs and Housing Assistance

There are a handful of state and federal programs that can provide individual and community-wide benefits. The following programs may be able to provide benefits to individual property owners. In the period after a presidential disaster declaration, FEMA provides assistance through mobile offices, called Disaster Recovery Centers.

Flood Insurance

Flood insurance covers flood damage from overland flow of water, and is NOT dependent on a presidential disaster being declared. Flood insurance – what it covers and what it doesn't provides a graphic representation of what is covered. Note that if you have a standard flood insurance policy, are in the mapped 100-year floodplain, and your community determines your home or business is substantially damaged, your policy will have an "Increased Cost of Compliance" (ICC) rider that can provide up to $30,000 towards the cost of elevating, moving, demolishing or floodproofing (dry floodproofing is allowed for non-residential structures only) the building (Note: The ICC claim and the damage claims, together, cannot exceed the insured amount for the building). Floodsmart.gov is the official federal website for all things flood insurance.

FEMA Individuals and Households Program (IHP)

After a presidential disaster declaration is made which specifically creates funding for individual assistance (which is only common in the most extreme disasters), the IHP program can provide financial assistance for housing needs not covered by insurance or provided by any other source, including

- lodging expense reimbursements for short-term stays;
- rental assistance for temporary housing; or
- repairs or replacement costs for your primary home

SBA Home and Personal Property Loan

If you are in a SBA disaster declared county and have experienced damage to your home or personal property, you may be eligible for financial assistance through a SBA Home and Personal Property Loan — even if you do not own a business. Homeowners may apply for up to $200,000 for home repair/replacement, and up to $40,000 for personal property replacement. The loans may not be used to upgrade homes or make additions, unless required by local building code.

FEMA Hazard Mitigation Grant Program (HMGP)

The Hazard Mitigation Grant Program assists in implementing long-term multi-hazard mitigation measures following a major disaster declaration. Here in Minnesota, funding may be available for acquisitions through a 75% federal/12.5% state/12.5% local cost share.

Minnesota Flood Hazard Mitigation Grant Assistance Program (FHM)

The Flood Hazard Mitigation grant program has funded a number of acquisitions to flood-prone structures in the state. When possible, these helps fund acquisitions through leveraging matching funds through the HMGP program.

Minnesota Housing Fix Up Loan Program

The Fix Up Loan Program offers affordable loans up to $50,000 for homeowners looking to repair or remodel their homes. The total amount of funding available varies for each unique event.

Utilizing Increased Cost of Compliance (ICC) to Rebuild Your Structure

Under the National Flood Insurance Program (NFIP), the Increased Cost of Compliance (ICC) program may provide up to $30,000 in financial assistance to either elevate or remove flood damaged structures from the floodplain. The ICC applies to flooded structures that are substantially damaged (this could also apply to structures that have been encountered repetitive losses, if the community has adopted such a provision in their ordinance).

ICC can be used to Floodproof (non-residential only), Relocate, Elevate, or Demolish (F.R.E.D.) a structure. Most commonly:

Relocation:

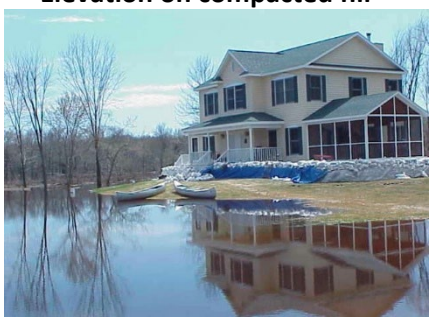
Relocating structures to higher ground or purchasing flood prone property is the safest way to protect against flooding and reduce the liability and cost to the community. Relocation can be expensive, but in the long run it is not as costly as repetitive flood damages and high flood insurance premiums.

Elevation:

There are a number of different ways in which a structure can be elevated:

Construction on crawlspace

Elevation on compacted fill



The elevation method is dependent on the structure's condition, flood hazard, local floodplain regulations, and owner's financial condition. When elevating, it is essential for all utilities (air conditioner, water heater, furnace, etc.) to be elevated to or above the Regulatory Flood Protection Elevation.

Owners who have standard flood insurance coverage have paid for and are eligible to receive ICC benefits if the local official determines that a structure located in a Special Flood Hazard Area has been substantially damaged by a flood or cumulatively damaged by flooding beyond 50% of the value of the structure when the damage occurred. When needed, advance payment options are available to property owners receiving these funds. ICC only has a limited window for eligibility, so it is important that damage determinations are done in a timely manner following a disaster.

ICC does not normally cover buildings in B, C, X, or D Zones. However, if the community can document that it is regulating an area outside of the Special Flood Hazard Area (e.g. if regulating based on preliminary maps, or regulating to the .02% annual chance (500 year) floodplain), ICC will be available.

Home Moving and Elevation Contractors

The International Association of Structural Movers, founded in 1982, is a trade association representing structural movers in 12 countries. The Association's website, contains a listing of professional movers that are members of the association. You are encouraged to contact these companies first when you have a need for elevation, relocation or other type services.

www.iasm.org

Resources

FEMA P-758 - Substantial Improvement/Substantial Damage Desk Reference, May, 2010

FEMA Publication 213, Answers to Questions About Substantially Improved/Substantially Damaged Buildings

FEMA Publication P-234, Repairing Your Flooded Home

FEMA Publication P-2055 – Post-disaster Building Safety Evaluation Guidance – Report on the Current State of Practice, including Recommendations Related to Structural and Nonstructural Safety and Habitability, November 2019.

IS-285 Substantial Damage Estimation for Floodplain Administrators - FEMA Web-Based Course

IS-284.a Using the Substantial Damage Estimator (SDE) 3.0 Tool - FEMA Web-Based Course

SDE Training Videos – 10 part YouTube Series (link is to the first module)

Minnesota Department of Natural Resources Flood Preparation, Response, and Recovery

Minnesota Homeland Security and Emergency Management disaster grant programs

Minnesota Homeland Security and Emergency Management Recovery Information and other State Resources

Minnesota Department of Labor and Industry Disaster Preparedness Manual for Building Officials

Minnesota Department of Labor and Industry Disaster Preparedness Volunteers

Cleaning Flooded Buildings – FEMA Fact Sheet

Who's Knocking at Your Door – FEMA homeowner tip sheet for web of interested parties after a flood event