Floodplain Management Today

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Floodplain Management Section
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The Importance of Substantial Damage Estimation

By Chuck Chase, CFM and Jared Ashton, PE, CFM

March 2019 brought historic flooding to the Midwest, affecting communities and people across the state. As these communities begin to recover from the flooding, we are reminded how important it is to be in good standing with the National Flood Insurance Program (NFIP). In addition to providing homeowners with access to flood insurance, Nebraska communities have also received millions of dollars in disaster recovery funds through Individual and Public Assistance. In order to be eligible for these, and many other, benefits after future disasters, communities must remain in good standing with the NFIP.

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Why the NFIP?

Prior to the establishment of the NFIP in 1968, private insurance companies offered flood insurance coverage. As repeated significant flood events occurred, many of these companies opted to stop selling flood insurance due to its financial risk. This left federal disaster assistance as the main financial recovery mechanism. At this point, the federal government stepped in and decided to provide coverage through the NFIP. A community participates in the NFIP by adopting ordinances that uphold, at least, the minimum standard for developing in a floodplain as defined in the Code of Federal Regulations and in return, the NFIP provides federally backed flood insurance for residents in these communities.

What are minimum standards?

Even in an NFIP participating community, the development standards only apply to development occurring in a FEMA designated Special Flood Hazard Area (SFHA), often referred to as the 100-year floodplain or 1% Annual Chance Floodplain. In general, this means that developers must submit documentation showing that they have analyzed the impact to the floodplain and apply for a for a floodplain development permit for **all** work done in the SFHA.

This allows a floodplain administrator for the community to review the documents to ensure development is not negatively affecting others in the community and that the future development

is reasonably safe from flooding. The floodplain development permit will identify requirements for the specific development that is occurring. For example, in Nebraska, homes must be built with the lowest floor at least 1 foot above the base flood elevation.

What about existing development?

There are many examples of development that was in-place prior to the establishment of the NFIP and/or prior to floodplains being identified on a Flood Insurance Rate Map (FIRM). These properties are referred to as Pre-FIRM structures and many have lowest floors, often basements, lower than the BFE. While these structures are acceptable as-is in the NFIP, if they ever need to be rebuilt the new structure would be need to be constructed following the local ordinance. FEMA developed a standard practice to identify when a structure needs to be rebuilt according to the ordinance, called Substantially Damaged. After a structure is damaged, it needs to be analyzed to determine the extent of the damage. If this exceeds 50% of the value of the structure, it is considered Substantially Damaged.

In the event of any disaster that damages structures in the SFHA, ordinances require the community to complete these substantial damage estimations. The decision on whether a structure is substantially damaged lies with the local floodplain administrator. Although it may be difficult to get community buy-in to follow these requirements, especially after a large disaster where property owners are eager to rebuild as quickly as possible. It is imperative that they are followed in order for the community to remain in good standing with the NFIP. Failure to do so could lead to homeowners in the community being unable to purchase flood insurance and, therefore, being unable to obtain a federally backed mortgage for a home or the community being ineligible for federal Public Assistance and Individual Assistance following future disasters.

Photo 1. Flood damaged property near Valley, Nebraska.

What does a Substantial Damage Estimation entail?

In general, the substantial damage estimation is a straightforward process. The floodplain administrator compares the estimated cost of repairs to the pre-disaster value of the structure to determine if it was substantially damaged. The source of the cost estimates can come from the property owner, a contractor, or can be determined by the floodplain administrator. It is important for the floodplain administrators to conduct all evaluations fairly and constantly across all affected properties in the community.

After the substantial damage documentation has been submitted, if the planned repair is less than 50% of the value of the structure, the floodplain administrator may issue a permit for the

repair to take place as the structure currently stands. If a property is determined to have been substantially damage the new structure must be rebuilt or repaired in accordance with the community's ordinance, which may mean filling in a basement, or elevating a property to be 1 foot above BFE.

Photo 2. Flood damaged property near Waterloo, Nebraska.

The scope of substantial damage estimation after an event of this magnitude can be monumental. Communities may be tempted to ignore completing substantial damage estimations, or possibly even to ignore floodplain development permitting for flood-damaged properties. As stated previously, in order for a community to remain in good standing with the NFIP and allow residents access to NFIP insurance these rules must be followed. In addition to these benefits of the NFIP, many of the recovery programs that communities have access to rely on communities being in good standing in the NFIP. This includes the programs listed above and the Hazard Mitigation Grant Program, which provides funds to communities for mitigation projects that reduce future losses from natural hazards. Now is not the time to risk a community's status in the NFIP.

There are ways to expedite permitting and substantial damage estimation. The importance of the NFIP to communities is more evident now than ever. It is important for community officials to remain vigilant and document substantial damage estimations and to permit flood damage repairs throughout the community's jurisdiction. If you need assistance or have questions, please reach out to NeDNR.

The Benefits of a Buyout

By Lori Laster, PE, CFM, Papio-Missouri River NRD

The best way to prevent flood loss is to remove what might be lost. While this isn't practical in many situations, removal of structures (homes and businesses) that were built prior to today's floodplain management standards is one of the ways to greatly reduce the risk of loss of life and property.

Buyout projects are generally accepted as a standard mitigation practice. The cost to purchase a structure at risk far outweighs the potential future losses to property owners and the costs incurred by cities and counties during flood events. The National Institute of Building Sciences released a report in 2017 that shows the national average is $6 saved for every $1 invested in mitigation projects. This savings is not exclusive to the homeowner. Many communities must spend money on first responders and rescues, personnel to monitor flooding in neighborhoods, and infrastructure repairs in these areas.

FEMA has prioritized acquisition projects in their Hazard Mitigation Assistance (HMA) programs for several years. Using these grant programs can greatly offset the costs of an acquisition project. Most projects are eligible for a 75% cost share and can be covered up to 100% depending on the repetitive loss status of the property, and the grant being used. If homes are in a Special Flood Hazard Area and they are valued at less than $275,000 they automatically meet the benefit cost ratio to be approved for HMA funds. This can make the application process much easier for the applicant agency.

However, buyouts can also be somewhat controversial. Elected officials can be hesitant to remove properties from tax rolls or to give the perceptions that they are forcing people from their homes. Homeowners can feel like there is some larger conspiracy to take land for another purpose. But with a little bit of data and some empathy, these projects can be completed to the satisfaction of all parties.

Photo 3. Home Purchased after the 2011 Missouri River Flood. (Photo courtesy of Papio-Missouri River NRD)

Empathy and honesty in dealing with homeowners is the best way to ensure a successful project. If you're taking on a buyout project after a flood, homeowners are going through many emotions with the loss of their home. They may be hearing rumors about condemnation and people "coming to take their land." The best way to deal with this is to be available to listen to them and answer their questions. If you don't know the answer to their questions, make sure to tell them that and say that you will find an answer.

It's also important to manage expectations. Buyout projects can take several months to complete, especially if you're using grant programs to fund the project.

Since 1993, the Papio-Missouri River Natural Resources District (District) has implemented buyouts of flood prone properties along several streams and rivers. The District has purchased over 150 homes that were previously flooded or in danger of being flooded.

Because there are many structures located in the Special Flood Hazard Area on current FEMA Flood Insurance Rate Maps (FIRMs), the District has prioritized areas that are typically older developments with homes that were built prior to floodplain management standards, mostly homes in the floodway.

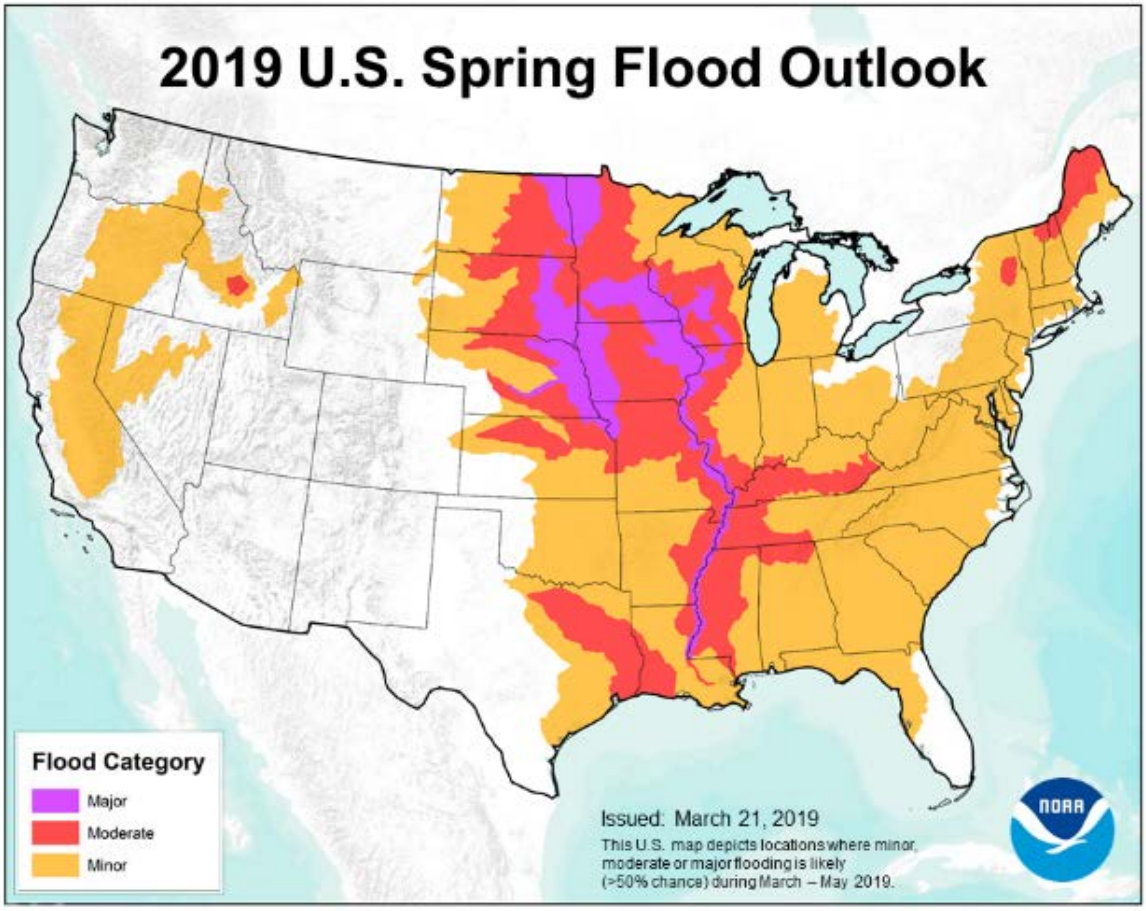
While the process may seem overwhelming, buyouts are one of the lowest cost projects with the highest benefits in fighting flood loss.

Prepare for a Flood *Before* the Flood

By Jamie Reinke, PE, CFM and Jared Ashton, PE, CFM

As this year has proven, flooding can happen anywhere and can happen quickly. While some floods develop slowly, allowing forecasters to predict where flooding will occur days or even weeks before the event, flash flood events can occur within minutes and sometimes without any sign of rain. Planning ahead and being prepared for a flood can save your life and give you peace of mind.

Even though we already saw record flooding across the state in March, the peak flood season in Nebraska typically occurs closer to June. In fact, the National Oceanic and Atmospheric Administration predicts that much of Nebraska is likely (>50% chance) to experience flooding from March through May 2019. Portions of Nebraska, especially along the Missouri River, are still experiencing flood conditions and areas previously impacted may experience more flooding this spring and summer. Now is the best time to take steps to be prepared for a flood event.



Know What to Expect

The most important piece of information to know before a flood is your property's flood risk. Do you live in a mapped community? If so, is your home in a FEMA designated floodplain or floodway? If you are unsure, you can search for your property on NeDNR's Interactive Floodplain

Map. If you would like additional information, or have questions about your flood risk, reach out to your floodplain administrator. Floodplain administrators for each NFIP participating jurisdiction can be found on NeDNR's website here.

As we get into peak flooding season, it is always important to be aware of weather conditions. Pay close attention to local media, especially if it has been raining hard for several hours, or steadily raining for several days. As the March 2019 event proved, being aware of ice conditions and frozen soils in early spring is also important if there is a threat of heavier rainfall.

Steps to Take Now

Purchase Flood Insurance: Anyone can experience damages from flooding, even if your property is not located in a FEMA designated floodplain, and homeowner's insurance policies rarely cover flood damage. To protect your investment and be more prepared to recover from a flood, work with your insurance agent to purchase flood insurance. After purchasing a flood insurance policy, be sure to keep all insurance policy information and a list of personal property in a safe place that you will be able to access immediately following a flood.

DID YOU KNOW…

if you are not in a designated floodplain, you can purchase a flood insurance policy at a preferred rate?

In fact, according to FEMA, property owners outside of mapped high-risk flood areas file more than 20-percent of all NFIP claims and receive one-third of federal Disaster Assistance for flooding.

Create an emergency plan for your family: Know the safest routes to get out of your house and neighborhood, if necessary. Identify a safe evacuation location: whether that be staying with an out-of-town relative, in a hotel, or shelter, know what options you have. As part of your emergency plan, assemble a disaster supply kit. This kit, at a minimum, should include a portable radio, flashlight, packaged food, and bottled water.

While we hope to avoid being impacted by a flood or any other disaster, it is always best to be prepared. The safety of your family is the most important consideration. By taking a few precautions now, you may be better able to recover if you are impacted in the future. For more information about how to prepare before a flood, what to do during a flood, or steps to follow after a flood, please visit NeDNR's website and read "In the Event of a Flood", "Are You Ready for a Flood or a Flash Flood", and "Beyond the Flood".

Substantial Damage Estimation Process

By Chuck Chase, CFM

Imagine you are the clerk and floodplain administrator of a small town where a new home has not been constructed in town for 5 years. You have never reviewed or approved a floodplain development permit. Most of the homes located in the floodplain are older and have not been altered since they were constructed.

Then a major flood impacts your community and damages over one hundred structures. As the floodplain administrator, it is your responsibility to permit any work taking place in the floodplain. To do that, you need to inspect every damaged structure to determine if it is Substantially

Damaged. The magnitude of the task is overwhelming, but you want to make sure the recovery is done correctly; both to make your town safer and to ensure your town remains in good standing with the NFIP. However, your citizens don't know that. They want to clean up the mess and repair the damage as soon as possible so that they can return to their homes and get back to their lives.

The article "The Importance of Substantial Damage Estimation", on Page 1, discusses the need for Substantial Damage Estimation (SDE), while FEMA's Substantial Improvement/Substantial Damage Desk Reference (FEMA P-758), and the 2019 State of Nebraska Disaster Damage Assessment Packet (Disaster Damage Packet) provide additional information on how to complete SDEs. You review these documents to determine the scope of the assessment, which does little to reduce your anxiety.

One method to completing SDE determinations is using FEMA's SDE 3.0 tool. The steps outlined in this article will explain how to efficiently complete the SDE using the SDE 3.0 tool.

Step 1: Eliminate any structures that are outside the floodplain. Consult your community's Effective Flood Insurance Rate Maps (FIRMs) to determine which of the damaged structures are not within the Special Flood Hazard Area (SFHA). Although these structures may be heavily damaged, they do not need a floodplain development permit. There may be other permitting requirements, but as a floodplain administrator, these structures are not your concern.

Step 2: Identify structures that are in the floodplain, but were permitted and built according to your community's current standards. SDE is used to determine which structures have to be repaired or rebuilt in compliance with your community's floodplain management ordinance. Since these structures were constructed in accordance with your current standards, they are already in compliance and you can simply permit the repairs to these structures. The magnitude of the damage makes no difference as long as they are repairing the home to the pre-flood condition.

Photo 4. Flood Damaged Structure. (Photo courtesy of Steve Samuelson, Kansas Department of Agriculture)

Step 3: Perform SDE field inspections for homes not eliminated in Steps 1 & 2. Using the Disaster Damage Packet SDE "Cheat Sheet" you will need to go out and perform field inspections of each of the structures identified in Step 2.

To demonstrate an easy process for completing Step 3, we will do a field assessment of the flood-damaged structure shown in Photo 3. Using the Residential Worksheet on Page 15 of the Disaster Damage Packet while in the field, you can quickly fill in:

- *Header Information and Property Location.* Enter your name, today's date, and the address of the structure. Take photos of each of the property and enter the photo number from your

camera for later. Latitude and Longitude can also be entered if you have that information, but are not required.

- *Structure Attributes.* In this example, the home is a single-family residence, one story, wood-framed, slab-on-grade structure. It has siding, shingles, and some type of HVAC system. Go ahead and check the box for each item. The quality of construction **before the flood** was probably good or at least average before the flood. For this example, say above average. Check all boxes on the sheet accordingly.
    - *Depth of Flood above Ground* and *Depth of Flood above Lowest Floor*. Looking at the mud line, for this example estimate the water was about 5 feet deep and between 3.5 and 4 foot above the top of the first floor.

- *Element Percentages. In this example, your physical field inspection could determine the following percent* damages.
    - *Foundation (Slab appears to be undermined) - 30%*
    - *Superstructure (Water depths of 2 to 4 feet) - 25%*
    - *Roof Damage (Roof is untouched) - 0%*
    - *Exterior (Waters less than 4 feet) - 30%*
    - *Doors and Windows (Waters greater than 2 inches) - 50%*
    - *Cabinets and Countertop (Waters greater than 3 inches, less than 4 feet) - 70%*
    - *Flooring (Waters greater than 1 inch) - 100%*
    - *Plumbing (Waters between 2 and 4 feet) - 30%*
    - *Electrical (Waters greater than 2 feet and less than 4 feet) - 10%*
    - *Built in appliances (Waters more than 3 feet) - 100%*
    - *Interior Finish (Waters less than 4 feet) - 30%*
    - *HVAC (Waters greater than 3 feet) - 60%*

- *Diagram w/Measurements and Number of Stories.* Finally, you will need to determine the home's square footage. If your county assessor has that information available on their website, all of the damaged homes' areas can be determined in your office. If not, you will need to estimate the home's size. For our example, we will estimate that the size of the home is roughly 28 feet by 32 feet, or 896 square feet.

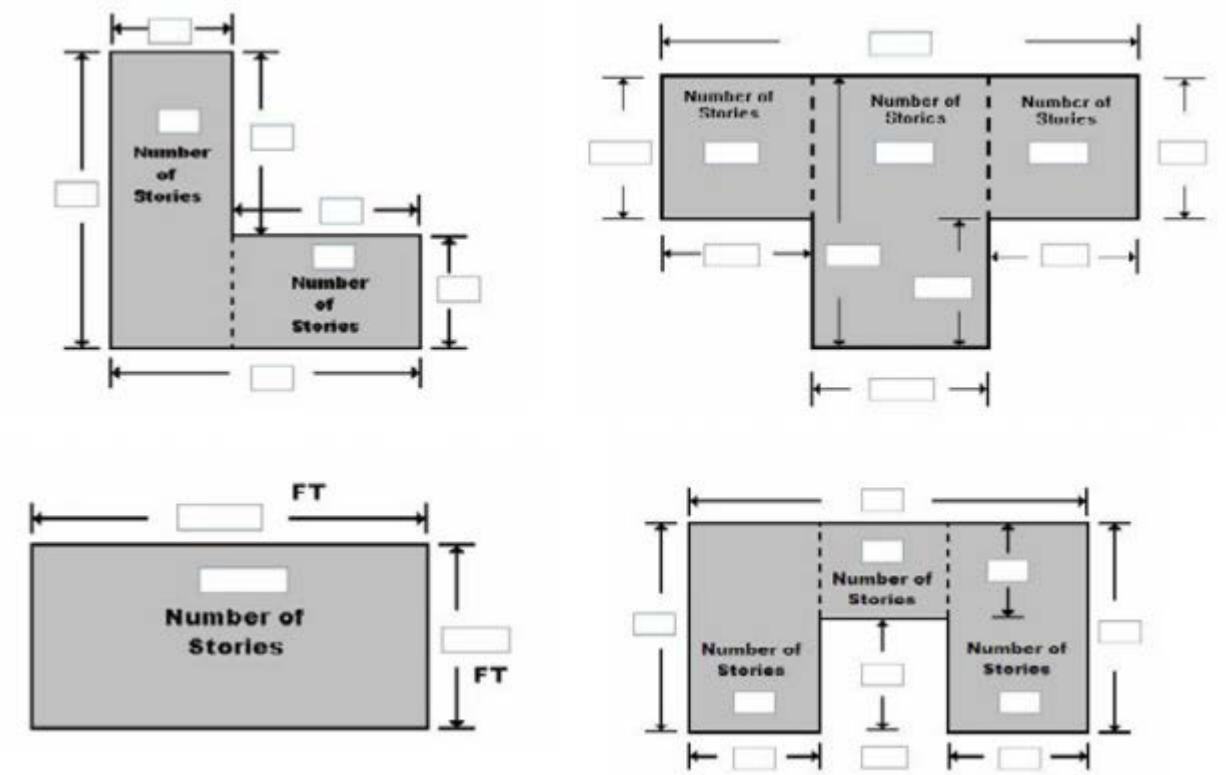


Figure 1. Structure Dimension Diagrams from SDE Residential Worksheet.

Step 4: Perform SDEs to determine homes that have damages greater than 50% of the home's value. Back in the office, you need to input the information from the worksheets into the SDE 3.0 Tool. Install the SDE 3.0 Tool on your computer and open it. Please note: this is not a web-based program. It is a standalone program downloaded to your computer. Neither the State nor FEMA can access your information without you sending the data to them.

Select the "Add New Residential Assessment" tab. Click on the "New Property" button in the lower right corner. At the top of the Residential Assessment screen, there are six tabs, as shown in Figure 2. The next paragraphs will cover the first five tabs. The sixth tab can be used to store photos of the damage.

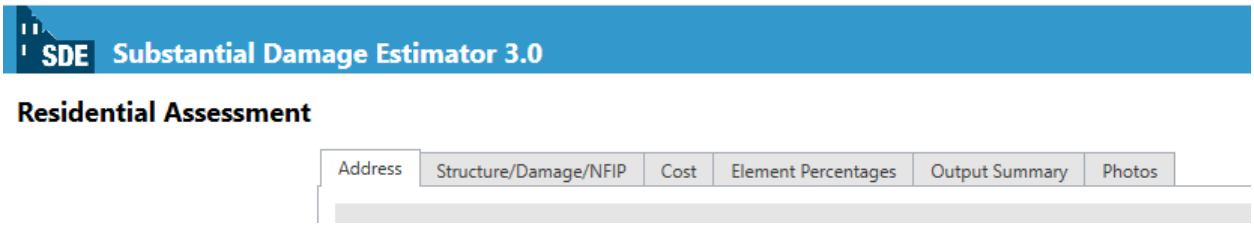


Figure 2. SDE 3.0 Tool Residential Assessment Tabs

Tab 1. Address: The Address tab is the default screen that shows when you add a new property. For this example, our hypothetical home will be in the Village of Stuart. Enter "310400" as the *NFIP Community ID* and "Village of Stuart" as the *NFIP Community Name*. Enter any data you have related to the structure address, however, only the CID is required. If you do not know your CID, contact the NeDNR Floodplain Management Section and we can provide it for you. The CID will be the same for all the properties within your jurisdiction.

Tab 2. Structure/Damage/NFIP: The information in the *Structure Attributes/Information* column contains information collected during the field assessment. The *Inspector/Damage Information* column contains the inspector's information or information that was completed on the inspection worksheet (such as Estimated Depth of Flood). The *NFIP/Community Information* column is not required, but is helpful to include, if known. Please note that you must enter the *Residence Type*. In addition, the foundation and number of stories are critical pieces of the estimation, so ensure you have adequately filled out these important portions of the evaluation.

Tab 3. Cost: Only two sections of this tab need to be completed for SDE determinations. The first is the *Square Footage* section. Click on the calculator and select the button to enter the square footage manually, or choose a house shape and fill in the dimensions. Using our example, simply type in 896 manually, then click the *Save and Close* button. Next, enter $125 for a base cost. This value represents the typical construction cost per square foot that is used in Nebraska. If you have knowledge that your community uses a different base cost, use that value instead. Next, enter '1' for Geographic Adjustment. After completing these fields, the value of the structure shows as $112,000 in the *Computed Actual Cash Value* field.

Figure 3. SDE 3.0 Tool Square Foot Calculator and Structure Shape Options.

The next step is to calculate depreciation percentage. The *Depreciation Rating* is a box with a pulldown menu with different depreciation ratings to select. In our example, we entered Above Average Condition during the field assessment, so select the same option from the pulldown. The *Depreciation Percentage* is calculated for you and a *Computed Actual Cash Value* is displayed.

Tab 4. Element Percentages: The information for this tab should come from your inspection worksheet.

Tab 5. Output Summary: This tab will tell you the percent damage based on your inputs on the prior tabs. Click the *Save* button. At this point, a box will come up with "Errors". If there are no items listed in red, click *Save* in the bottom-right corner of the window. The SDE 3.0 Tool calculated 48.6% damaged for our example.

Your community may feel that their inspections have certain

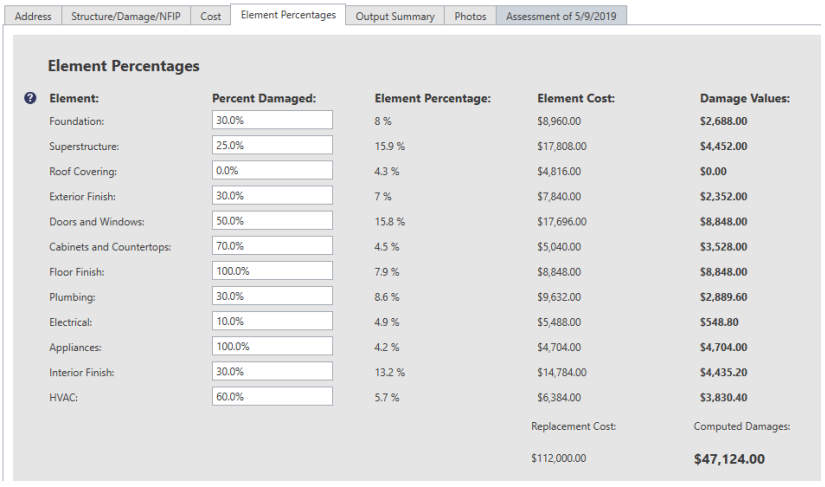


Figure 4. SDE 3.0 Tool Element Percentages.

degree of uncertainty. Therefore they may have a range in which they request more detailed information to determine if it is above or below the 50% threshold. This may include requesting an inspection inside the property, or an itemized quote for repairs from a certified contractor. The itemized quote will need to include at minimum elements, even if zero, used in the SDE 3.0 tool.

Step 5. Provide the information to the property owner.
Provide the property owner with a letter stating what their percent damage was to their structure. The letter also needs to clearly define what the next steps are for that property owner. For property owners with less than 50% damaged, a floodplain development permit must be issued before repairs to the structure begin. For properties 50% or greater, the letter needs to define the requirements of the local ordinance and appeal process.

Step 6: Provide an appeals process for property owners. Your community will need to come up with an appeal process for the SDE determinations and communicate that process to the property owners. There are several ways that a SDE determination can be appealed:

- The property owner can hire a licensed appraiser to appraise the pre-flood value of the home and work needed to repair **all** the damage, even if they do not intend on repairing everything at this time. If the cost of the repairs is less than 50% of the appraised pre-flood value of the home, you may permit the repairs. These numbers can be entered in Tab 5: Output Summary of the SDE 3.0 Tool.
- The property owner can hire a certified contractor to provide an itemized quote for the work needed to repair **all** the damage, even if they do not intend on repairing everything at this time. If the quote is less than 50% the tax-assessed value of the property, you may permit the repairs. If the quote is more than 50% of the tax-assessed value, permit the rebuild or repair in compliance with your ordinance. These numbers can be entered in Tab 5: Output Summary of the SDE 3.0 Tool.

To ensure consistency and equity, local officials responsible for substantial damage determinations are strongly encouraged to select only one method for the entire community for determining structure values and repair costs. When using the SDE 3.0 Tool, only the computed damages based on the element percentages within the software can be compared to the replacement values. An appraisal or adjusted tax value cannot be compared to the computed replacement value because they are market values. These have to be compared to an itemized quote from a certified contractor.

In all cases, keep a copy of the SDE determination documentation, including cost estimate and the assessment or appraisal with your copy of the permit.

Post-disaster permitting is a lot of work and you will likely be under a lot of pressure to grant permits. However, the importance of following this process cannot be understated. Proper permitting is necessary to keep your community in good standing with the NFIP. Your community's good standing is necessary to receive federal disaster funds for your community, your businesses, and your citizens.

If you find that you are still overwhelmed, contact the Floodplain Management Section of NeDNR, there may be resources available to assist you in carrying out your post-flood responsibilities.

Mark Your Calendar

If you have questions about any of these opportunities, please contact Chuck Chase at chuck.chase@nebraska.gov or 402.471.9422.

Nebraska Silver Jackets and Nebraska Floodplain and Stormwater Managers Association Flood Response Workshop; July 10, 2019, Nebraska City, Nebraska

The Nebraska Silver Jackets, with assistance from NeFSMA, will be hosting a free event, Flood Response Workshop and Lessons Learned, on July 10, 2019 at the Kimmel Orchard & Vineyard Education Foundation, 5985 G Road, Nebraska City, Nebraska. This event is free, but space is limited. You must register by July 5, 2019.

Please visit www.nefsma.com for more information.

Nebraska Floodplain and Stormwater Managers Association 11th Annual Conference; July 11, 2018, Nebraska City, Nebraska

NeFSMA will host their annual conference on Thursday, July 11, 2019 at the Lied Lodge in Nebraska City, Nebraska. There will be an educational workshop prior to the conference on July 11, 2018. There will be opportunities for floodplain management training, CFM credits, and networking with other professionals in floodplain management.

Please visit www.nefsma.com for more information.

National Flood Insurance Program Training Videos

NFIP Training courses for insurance agents, claims adjusters, surveyors and community officials are being offered through the FEMA Emergency Management Institute (EMI) Independent Study (IS) Program. IS courses are open and free to anyone. Floodplain administrators may find these videos helpful.

The Independent Study catalog is available at https://training.fema.gov/is/crslist.aspx. Course exams require a FEMA Student Identification (SID) Number, which can be obtained at https://cdp.dhs.gov/femasid.

WANT MORE INFORMATION?

Visit NeDNR's Floodplain Website at
https://dnr.nebraska.gov/floodplain

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