



Long Beach, N.Y., Nov. 8, 2012—Aerial views of Hurricane Sandy damage to homes on Long Beach, New York. Following the hurricane, a nor'easter struck the area causing more power outages and additional flooding.

Andrea Booher/FEMA

what to do in the **AFTERMATH**

The tragic truth is that the best means of determining the accuracy of risk predicted by the Flood Insurance Rate Maps is to have a flood. Post disaster verification in the form of flyovers, high water marks, and tidal gages are part of the process of ascertaining the true horizontal and vertical extents of flood risks.

The areas so heavily affected by Superstorm Sandy are facing the same dilemmas as those wrecked by the tag teams of Hurricanes Rita and Katrina, Hurricane Irene and Tropical Storm Lee. We want to “recover”, to build back and resume our lives as we are used to them. But beyond that emotional reaction, more logically we know that recreating the same construction that could not withstand those particular onslaughts is not sound practice. No matter the location there are several common scenarios in the aftermath of such devastation:

- The property was previously mapped outside of the Special Flood Hazard Area (SFHA, or 1% annual chance floodplain) and now is identified as in it
- The property was previously identified as at risk for one Base Flood Elevation (BFE) and is now subject to a much higher BFE
- The property was previously mapped as being in an A-type SFHA, and is now identified as being in a V-type zone.

Each of these situations presents new design, construction, and economic hurdles. While facing them is not easy, we must confront them to decide if building back is feasible or wise. If we do move ahead with plans, there are factors we may not have considered before the “new normal” set in. While the points listed here are not exhaustive, they are meant to give some guidance so that we ask the right questions before simply barreling ahead toward “recovery”.

>> By Wendy Lathrop, PS, CFM



Before and after view showing damage from Storm waves and surge that cut across the barrier island at Mantoloking, NJ.

The property was previously mapped outside of the Special Flood Hazard Area (SFHA, or 1% annual chance flood-plain) and now is identified as in it

When properties are newly identified as being subject to the SFHA, owners are often dismayed that they are suddenly subject to mandatory flood insurance coverage requirements enforced by

lending institutions on behalf of the National Flood Insurance Program. If the structure on site is within the SFHA (identified as such by the existing ground elevation being at or below the mapped BFE) and is secured by or serves as collateral on a loan of any sort, then it must be covered by flood insurance (unimproved land is not insured). As a

side note, the Biggert Waters Act of 2012 made it easier to pay for coverage by allowing installment payments.

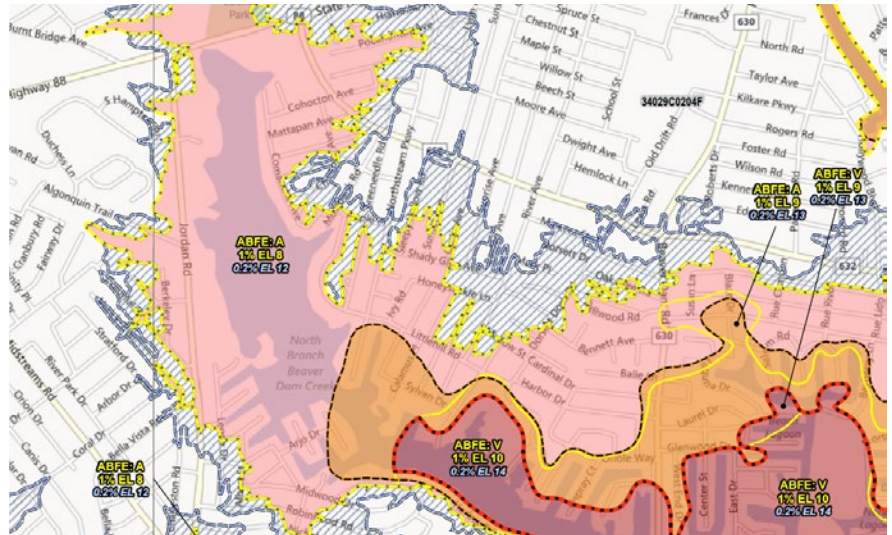
- If the new mapping seems to include areas in the SFHA that should not be, then applying for a Letter of Map Amendment is the means to exempt structures from mandatory insurance purchase requirements.
- If a lender's flood zone determination vendor has identified the structure as being within the SFHA, then the lender and borrower can jointly apply to FEMA for a Letter of Determination Review (LODR), a last-resort process that has been in place since the 1994 Flood Insurance Reform Act. It is described in 42 USC 4012a(e)(3) and also detailed on FEMA's website.

Aside from the insurance coverage aspect, structures newly identified as being in the SFHA must now comply with building and land use regulations for floodplain construction.

- Structures must be floodproofed. Only wet floodproofing is acceptable for residential structures, meaning use of flood openings to equalize hydrostatic pressures on both sides of walls. Either wet or dry floodproofing is acceptable for non-residential structures. Buildings not previously floodproofed must be retrofitted.
- The lowest floor elevation must be at or above the identified BFE for the lowest structural and contents flood insurance premiums (two different policies), which may induce some to convert the use of lowest floor areas to parking, access to the building, and storage of only low-value items. Elevating the entire structure is another means of reducing cost of coverage. Owners must determine return on investment. Some hazard

mitigation grant money may be available; funds are very limited and generally awarded for structures subject to repetitive losses.

- Machinery and equipment servicing the structure must also adhere to safety requirements. See line C2e on the Elevation Certificate. For example, hot water heaters and furnaces should be elevated on platforms or suspended from the ceiling so that they are above BFE. The mechanisms controlling elevators must be elevated a foot above BFE so that anyone in the elevator cabin during a flood will not be plunged into a flooded shaft due to mechanical failure.
- Any improvement to a structure in the SFHA that exceeds 30% of the structure's fair market value triggers a requirement that the entire structure must be brought into compliance with current codes, not just codes at the time of original construction. This is a new limit, revised downward from 50% by the Biggert Waters Act.



Maps showing ABFE and zone changes are posted on FEMA Region III's website. The Limit of Moderate Wave Action (LIMWA) with 1.5' breaking waves within A-type zones coincides with transitions between ABFEs.

The property was previously identified as at risk for one Base Flood Elevation (BFE) and is now subject to a much higher BFE

Buildings already known to be in the SFHA may now be facing the shock of dramatically higher BFE identifications. There is the added insecurity of not knowing whether published Advisory Base Flood Elevations (which are interim

guidance issued while waiting for publication of new and more accurate mapped depictions of the true risk) will be adopted as the new BFE levels, or if the new BFEs will be higher or lower than the Advisory BFEs.

The best approach is to wait until new mapping is presented and adopted, but this isn't an easy answer. I will not make any recommendations as to following or not following ABFEs beyond urging you to check in regularly with the local community to see what it is accepting as reasonable until the new mapping comes out. The process of adopting new maps is lengthy, entailing public hearings, public comments (30 days) or public

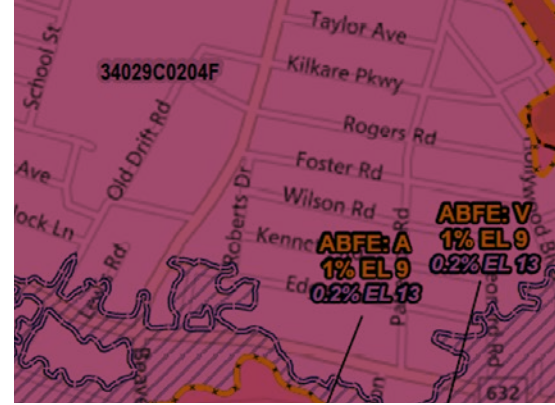


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Above: Sea Gate, N.Y., Nov. 16, 2012—Homeowner and Sea Gate resident, Angelo DeAngelis stands in the doorway of what was once was his living room.

Right: N.Y., Nov. 16, 2012—A home ripped open by Hurricane Sandy reveals a computer table hanging in the balance of a collapsed second story.



Binghamton, N.Y., September 8, 2011 — A floodwall, built with hazard mitigation funds from the Federal Emergency Management Agency and New York State protected this vital property from flood waters that devastated other parts of the city, even as rising water from the Susquehanna River engulfed the hospital's parking lot during Tropical Storm Lee.

appeals (90 days), FEMA response (within a “reasonable time”), and then a six-month time frame from issuance of FEMA’s Letter of Final Determination before new maps become effective, a time during which the community must update its ordinances to reflect the information on the new Flood Insurance Rate Maps.

The repercussions of a newly raised BFE are similar to the first scenario in which a site is identified as being situated in the SFHA for the first time. However, being already aware of floodprone status means that the structures in this scenario should already be somewhat in compliance with NFIP regulations. In the best of all possible worlds, the existing structure was already oversized so that no further changes are needed.

However, that is not always what we face, and other approaches may be necessary to keep buildings in regulatory compliance and keep their insurance

costs as low as possible. It may be a matter of increasing floodproofing elements, or of changing the use of the lowest floor. The idealistic approach to reducing flood insurance premiums is elevation of the structure so that its lowest floor is at or above the new BFE. This is not inexpensive. Furthermore, consider the difficulty of access to elevated structures. Design must address the necessary space to install stairs and ramps, while matching existing exterior road and sidewalk grades.

Keep in mind that retrofits may cause the entire structure to fall into the new 30% category of Biggert Waters to trigger new compliance

requirements—highly likely in pre-FIRM structures built before the area was ever mapped within the SFHA. Incidentally, grandfathered pre-FIRM insurance rates are being phased out over the five-year period beginning with passage of Biggert Waters so that by 2017 everyone will be paying true actuarial rates. (No one ever said that being safe and being insured would be easy.)

For surveyors using the ABFEs, be sure to document the source and clearly identify the distinction between current map information and the Advisory data. The idea is to keep people from shooting the messenger, while still delivering the bad news.

Rochester, Vt., September 12, 2011 — Tropical storm Irene swelled rivers throughout Vermont bringing down trees along river banks and causing massive jams.



Photo by Wendell A. Davis, Jr.



Coney Island, N.Y., Nov. 12, 2012—Aerial view of a Coney Island home moved off of its foundation by Hurricane Sandy. The waves and surge damaged and destroyed thousands of homes on the Eastern coast.

Andrea Booher/FEMA

The property was previously mapped as being in an A-type SFHA, and is now identified as being in a V-type zone.

In this situation, we already knew a structure was floodprone, and presumably it was appropriately constructed with the lowest floor at or above BFE and properly floodproofed. (Of course, this presumption may not be true for pre-FIRM buildings.) But now we are in a completely new kind of hazard zone, one that is subject to storm surge and wave velocity. Buildings in V-type zones must be elevated with their lowest structural members of their lowest floors at or above the BFE so that water can pass freely beneath them, free of obstruction. This is where hazard mitigation grants may be most useful.

Construction in V-type zones is stringently regulated. Designers may want to fill sites to raise them above BFE, but 44 CFR 60.3(e) clearly prohibits such activity. FEMA's Technical Bulletin 5 ("Free of Obstruction Requirements") provides a long list of other activities that are considered obstructions, some

of which may surprise you but all of which make sense. Be careful in designing non-supporting breakaway walls; improper installation may also create obstructions, sending a building out of regulatory compliance and triggering skyrocketing insurance premiums. Technical Bulletin 9 provides some guidance in this arena.

Another possible thought is to build a wall or levee around a site in Zone V. Don't do it. First, this likely will be considered illegal fill in the V-zone. Second, we must consider the cumulative effects of our actions, making sure that by protecting our site we are not harming someone else's. The Association of State Flood Plain Managers (ASFPM, www.floods.org) has a wealth of information available regarding No Adverse Impact design and construction. We no longer live in an age when we can put on blinders to shut out the rest of the world.

For surveyors completing Elevation Certificates, remember that the new zone designation means that

additional elevations and photographs may be necessary to document existing conditions. A house that had complied with A-type zone requirements will probably not be compliant with V-type zone requirements, which means that additional documentation (that protects you) will also help your client, the local community, and the insurance agent in everyone's next steps.

Again, this article is not meant to be exhaustive. Rather, it should make us all consider our actions a little more carefully in the post-disaster world. Whether designing, measuring, or regulating, we all have a role to play in protecting lives and property. *A*

Wendy Lathrop is licensed as a Professional Land Surveyor in NJ, PA, DE, and MD, and has been involved since 1974 in surveying projects ranging from construction to boundary to environmental land use disputes. She is a Professional Planner in NJ, and a Certified Floodplain Manager through ASFPM.