

Submit your own items or suggestions for future topics to column editor Rebecca Quinn, CFM, at rcquinn@earthlink.net. Comments welcomed!

In my last column I mentioned that I don't get many comments, which prompted several people to e-mail with questions they've been looking into. I got only one request for a set of past columns, which might begin to appear in a state floodplain management newsletter.

One question came from a local official in Florida, asking about regulating buildings that are exempt by law from the state building code. Another local official, from Colorado, asked about regulating buildings that are situated slightly outside of the Special Flood Hazard Area (SFHA), but have basements below the Base Flood Elevation (BFE).

Buildings Exempt from Building Code.

The answer to this question is simple: Communities that participate in the National Flood Insurance Program (NFIP) agree to regulate development in special flood hazard areas – *all* development. The term is broadly defined: "any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials." Regardless of what mechanism is used to accomplish it, all development in SFHAs, even buildings exempt by law from the building code, must be regulated.

Agricultural buildings are the most common exemption, but I've also seen state codes that exempt "[hunting/fishing camps](#)," buildings associated with railroads and electric utilities, and others.

Most communities issue both building permits and floodplain development permits. Building permits are issued for buildings and structures within the scope of the building code (see note at end). Floodplain development permits are issued for all other development. And sometimes both permits are issued for a single project. This is one reason why coordination between building officials and floodplain administrators is so important, doubly so if they work in different departments.

Back to those exempt structures: Simply because they are exempt from the building code does not exempt them from the community's responsibility and commitment to the NFIP. The solution is to authorize those buildings by issuance of floodplain development permits. The next question is: What rules apply? And the answer to that depends on how the local floodplain management regulations are written.

As more states are developing regulations explicitly written to coordinate with the building code, I've seen a clean and easy way to do it. For all of the specific flood requirements, the building code refers to the standard ASCE 24, *Flood Resistant Design and Construction*. Thus, ordinances can be written to "recapture" those exempt buildings and require them to be designed and constructed in accordance with ASCE 24. The community then reviews plans for conformance with ASCE 24 and issues a floodplain development permit. But until coordinated regulations are adopted, communities would apply the requirements for buildings that should already be in their floodplain management regulations.

Buildings Just Outside the SFHA.

This question about buildings just outside the SFHA that have basements has both an easy answer and a somewhat complicated possible resolution.

The local official who asked the question already knew the easy answer: A building footprint that is entirely outside of the SFHA boundary, even by inches, is not regulated as floodplain development because it is not within the mapped SFHA. Of course, there can be spirited discussions about the exact location of a building footprint relative to the SFHA boundary, especially when someone pulls out a ruler to measure the width of the line on the FIRM. (I've had those discussions, notably when a building straddles the boundary between Zone A and Zone V.) Remember that buildings in more than one zone must comply with the requirements of the more restrictive zone. That applies even if buildings straddle the SFHA boundary, partially in and partially out. In those cases, the entire building is required to meet the SFHA requirements.

Continued on page 5

A consequence of the easy answer is that a building with a basement below the BFE could be located smack next to the SFHA boundary and there's not much you can do about it.

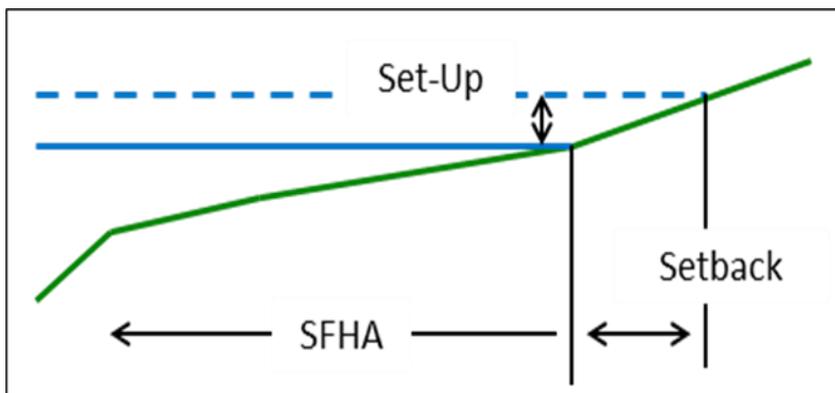
And what's so bad about that? Well, loyal readers know that one of my favorite sayings is "Mother Nature doesn't read flood maps!" When was the last time you saw rising floodwaters stop precisely at the BFE? And when was the last time you saw inundated areas precisely lined up with the SFHA boundaries?

Now imagine a building slightly outside of the SFHA boundary, with the main floor at-grade and a basement. Keep in mind that it only takes an inch or two of water above the floor to spill into and fill the basement. So if flooding rises just a little above the BFE, the building and contents could be damaged, perhaps significantly.

There's another, perhaps less likely consequence except in areas where floodwaters stay high for more than a day or two. Even if floodwaters don't come in contact with the exterior foundation of the building, if the ground surrounding the basement becomes saturated, the unbalanced hydrostatic pressure against the basement walls could lead to structural damage. I've heard that some communities adopt floodplain regulations that control based on BFE, not only the SFHA on the map. The effect is to preclude basements below the BFE, even if the elevation of the ground above is higher than the BFE.

Although it doesn't entirely solve the basement problem, there's a practical way to take into consideration both uncertainties in mapping (often due to map scale) and development on land immediately adjacent to the SFHA boundary. And it's a nifty way to effectively account for future BFE increases, too, such as sea level rise.

Suppose a community adopts freeboard, thus increasing the level of protection for buildings within the SFHA. But buildings right next door, just outside of the SFHA, could be permitted flat on the ground (thus lower than the SFHA buildings). The sketch shows how the additional height can be used in regulation, by establishing a "setback" combined with a "set-up."



Here's how it works. Suppose the community adopts 2-ft freeboard. Logically, that suggests the set-up should also be 2-ft. And suppose the community thinks a 100-ft setback from the SFHA boundary is reasonable. Although a line on a map isn't necessary to implement this approach, with good enough topography, that combination can be used to delineate an added "factor of safety zone" within which the regulations apply.

This approach can also be used to guide development away from the SFHA by using the set-up and setback in combination, and requiring buildings to be located landward of the location identified by either parameter. Thus, a building would have to be set back at least 100 feet from the SFHA boundary, unless the topography is such that the set-up is satisfied at a closer location.

[RCQ]

NOTE: FEMA has determined that the flood provisions of the International Code Series are consistent with the NFIP requirements for buildings and structures (2006 and later editions). Most state and local building codes are based on the I-Codes.

Download excerpts of the flood provisions of the 2009 I-Codes and "Highlights of ASCE 24"
www.fema.gov/rebuild/buildingscience/coderesources.shtm