

used to elevate a home.

n the aftermath of hurricane and flooding damage from storms, opportunities exist for surveyors to be part of the planning, mapping, recovery, and construction. Locations are everywhere the water touched, and even higher in the watershed, as cumulative effects of non-disaster-related development sends runoff rushing downhill to the floodplains.

CONSULTING

One of our most important jobs is to guide and inform our clients. This does not mean that surveyors must be intimately familiar with every single nook and cranny of floodplain regulation and management. Instead, having a good general understanding of how the National Flood Insurance Program (NFIP) functions and the reasons behind why it functions as

it does helps us to better serve our clients. Finding a specialty somewhere within the broad realm of floodplain management adds to the value of what we can offer, creating demand for our services while improving our ledgers. Remember that knowing where information can be found even if we don't have it ourselves has much value.

Every job we do in relation to floodplains amounts to consulting. Clients expect us to sort out what it is that they mean to ask us for (but don't) from their often less than clear descriptions of needs and ideas and designs. This requires a thorough understanding of minimum land use regulations according to 44 CFR 60.3. This essential set of rules is the basis for all local floodplain regulation, being the minimum for participation in the NFIP and the benefits associated with that participation (technical assistance, disaster and mitigation assistance, reduced

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Hanover, N.Y., October 15, 2009 —FEMA Mitigation Surveyors Andy Pleshko and Miguel Flores review a list of Repetitive Loss properties they are surveying in the town of Hanover, NY.

insurance rates in Community Rating System member communities).

How does knowing these rules increase our value to clients? A few examples:

- We know when our clients should elevate the mechanical and electrical equipment, and by how much. Letting them know this means they may have an opportunity to save on their insurance premiums.
- We understand how to submit successful applications for map changes. We also know when existing conditions don't warrant an application. Possibly we can recommend changes to existing conditions to improve the outcome.
- We can identify some of the obstructions to the flow of coastal waters that will result in insurance and regulatory penalties. Sharing this information directly with clients allows opportunities to correct such problems.

The best advice I can give any surveyor is to keep learning, keep up with changes in the federal program, and keep informed about differences between federal guidelines and local application of them. The Association of State Flood Plain Managers (ASFPM) has established a national professional certification program that allows individuals to test for status as Certified Floodplain Managers. This credential can be very useful to a surveyor when presenting reports to planning boards, sharing field information with other design professionals, and serving as an expert or fact witness regarding surveying activities in the floodplain. Visit www.floods.org to learn what is entailed in acquiring and maintaining CFM status.

FEMA

Let's look briefly at just some of the floodplain consulting and surveying services we can provide.

ELEVATION CERTIFICATES

Completing Elevation Certificates is one of the most common surveying activities in floodplains. Even this can entail consulting work. Our first task is to determine the purpose for which the form is intended.

When the request is so flood insurance can be rated, we need to be aware of various construction details that can affect premiums. In an A-type zone, does the structure have the appropriate flood openings? Refer to FEMA's Technical Bulletin 1 ("Openings in Foundation Walls and Walls of Enclosures Below Elevated Building in Special Flood Hazard Areas") for what constitutes an appropriate flood opening, the appropriate number of openings, and the appropriate placement of those openings. Read the instructions of the Elevation Certificate for guidance on how to measure the actual opening allowing water into and out of the structure. Does the building have a crawlspace? Check FEMA's Technical Bulletin 11 ("Crawlspace Construction for Buildings



Located in Special Flood Hazard Areas") to determine if that space beneath the finished first floor is really a basement instead of a crawlspace, and for the pro-active, the Insurance Agent's Manual illustrates the repercussions for a crawlspace floor that is below grade on all sides. Is the site in a coastal V zone? Buildings in these areas should be constructed so that water can pass freely beneath them. Learn about what is considered an obstruction to that flow from Technical Bulletin 5 ("Free of Obstruction Requirements"). Direct your client to it as well.

Maybe the form will be used to report elevation data to support a Letter of Map Amendment (LOMA) or a Letter of Map Revision Based on Fill (LOMR-F). The surveyor must be familiar with the distinction between these two applications for exemption from federal floodplain management regulation and federal flood insurance requirements. But remember that local communities may have stronger rules for sites previously filled to be higher than the former floodplain. Communities may deed-restrict or otherwise ban construction cut into fill in order to protect against the hazards presented by saturated soils. For the reasoning, read Technical Bulletin 10 ("Ensuring that Structures Built on Fill In or Near Special Flood Hazard Areas are Reasonably Safe From Flooding").

Sometimes the Elevation Certificate is used to show a lender that the structure is being constructed according to plan so that phased financing can be released. Other times it is required as part of the permitting process associated with community compliance with the NFIP, when interim checks during construction verify if all is going according to proposed plans.

The form can be used to show that terms of a Conditional Letter of Map Amendment or Conditional Letter of Map Revision have been fulfilled. When the Elevation Certificate reports "as built" elevations, the result will be the requested Letter, no longer Conditional, exempting the premises from NFIP requirements. Remember that lenders and communities might still impose their own requirements, but the financial implications are generally less than prior to the issuance of the Letter of Map Change.

Yet another reason to complete an Elevation Certificate is for a community or state to conduct Benefit Cost Analyses for buyouts of severely damaged or repetitively damaged structures. The process of acquiring structures to clear them from the 1% annual chance floodplain requires elevation data about the buildings and their facilities to compare the calculated costs of repair, retrofitting, and rescues to pre-storm fair market value (FMV). Mitigation funds for such voluntary acquisitions are only available when the ratio of costs to FMV is 1.0 or greater. Beyond elevations, our photographs of the structure provide documentation for both sides of the analytical equation.

CORRECTING CURRENTLY EFFECTIVE MAPS

In areas where no new mapping is planned, landowners often appeal Flood Insurance Rate Maps (FIRMs) showing

Agency, Mo., 6-23-07 — Buchanam Co EMA Director points to the May high water flood mark on the flood pole. This area is hit by repeated flooding and people are looking

at mitigation as a

future damage.

way to help prevent

their buildings inside the 1% annual chance floodplain. To be exempted from floodplain regulations and mandatory flood insurance purchase (the latter only when there is a building on site securing a mortgage or other loan), landowners must provide specific topographic data.

Apply for a Letter of Amendment (LOMA) when conditions have not changed since the map became effective, and the lowest ground at the foundation is higher than the reported Base Flood Elevation (BFE). If the LOMA is meant to exempt a piece of land from the 1% annual-chance floodplain, the entire site must be higher than BFE. Refer to 44 *CFR* 70 for the details that will result in a successful LOMA application.

When fill was brought in to raise a site above BFE after the date of the currently effective map, then the proper application for exemption from floodplain and insurance regulations is a Letter of Map Revision Based on Fill (LOMR-F). Now the lowest floor of the structure, including the basement, must be above BFE for exemption. Surveyors need to be familiar with this distinction from LOMAs in order to advise clients properly and to submit only those applications that will succeed. Most pertinent to this are 44 CFR 65.5 and Technical Bulletin 10.

When a client's planned project will result in altered grades, altered stormwater management, and/or altered water courses, surveyors provide both the existing topography for design and the subsequent "as built" information for Letters of Map Revision (LOMRs). It's all part of floodplain management, even if we don't usually refer to it that way.

POST-DISASTER VERIFICATION

Did the existing FIRMs accurately predict both horizontal and vertical extent of flooding? We measure inundation levels and high water marks, locate the reach of inland flooding, document damaged infrastructure and the path of breaches. This data may serve as interim guidance for construction while awaiting new FIRMs, providing the basis for Advisory Base Flood Elevations.



NEW MAPPING

There comes a time when currently effective FIRMs can no longer be used with confidence, due to outdated or erroneous information. Masses of various Letters of Map Change result in a piecemeal vision of actual conditions in a watershed. Maybe post-disaster verification showed how inadequate the current maps were. Balancing resources to accommodate studies may lead to a totally new study, requiring new topography and new analysis. With a smaller purse, the scope is more limited, but still requires similar data.

Look for notices online in the "FedBizOpps" (formerly the "Commerce Business Daily", now at http://www. cbd-net.com/index.php/doc/home) for federal bidding opportunities in mapping and flood activities. You can also register in the "Doing Business with FEMA" section of the agency's website (http://www.fema.gov/doingbusiness-fema). Don't forget to check the "Legal Notices" section of your local newspapers (in print or online) for other contracting and consulting opportunities.

SO MUCH TO DO!

Flooding can destroy all benchmarks and scour away any features that might have helped in re-establishing the datum. Bringing elevations into a damaged area is substantial and difficult work. Likewise, all horizontal monumentation might have been destroyed, making location of property lines a complex and time-consuming process. Both activities are central to recovery. Here come surveyors to the rescue again.

This article by no means provides an exhaustive list of the ways in which surveyors can be part of floodplain management. Knowledge, creativity, and experience allow us to provide valuable services to our communities before and after the inevitable storms.

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