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Fiddling with Floods

My brother and I recently spent several days in New Orleans working with Habitat for Humanity on new, elevated homes in the Upper 9th Ward. On our way to the job site each day, we passed businesses and houses that, three years and a month after

Katrina's tumultuous visit, look like they may never even be cleared away although they are little more than barely standing debris. As a result, I am even more mistrustful of those who prefer to fiddle with floodplain designations than protect those who would be moving to areas in which the dangers have been misrepresented. I once heard an analogy between building a house on

a train track and building a house in a floodplain: you may not know exactly when the train or flood will come, but you know that it will.

Another riverfront city, Columbia, South Carolina has also had its share of pressure to develop its floodplains. The Congaree River is formed by the confluence of the Saluda and Broad

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The property that is the basis for the suit initiated by Columbia Ventures sits between the Congaree River and the intersection of Bluff Road/Route 48 with Interstate 77. This first map (which does not show Interstate 77 but does show Bluff Road at the right) was the subject of a restudy contracted by FEMA when Columbia Venture began promoting its ambitious plans to develop the floodplains on the Richland County side of the Congaree River. The crosshatching represents floodway areas. Mismatching of contours and other features across the three map panels that were pieced together for this image is not an uncommon occurrence.



The restudy of the Congaree River resulted in significant expansion of the regulatory floodway (and the new map shows Interstate 77 for the first time). The court's decision in favor of Columbia Venture that inadequate public notice should nullify this map did not apply to later reinstatement of this map when the city of Cayce (in the white area on the left side of the Congaree) decided to annex the floodplain on the Richland County side of the river.

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Rivers, and where it divides Columbia, in Richland County, from Cayce, in Lexington County has been the site of a war featuring some battles likely to be of interest to surveyors and engineers.

Columbia Venture, LLC bought 4,474 acres in the Congaree floodplain on the Columbia side of the river for \$11 million and in 1999 announced its plans to create a massive (700-acre) high tech

research development park known as Green Diamond that was projected to cost \$4 billion. The Federal Emergency Management Agency (FEMA) had earlier contracted a restudy of the floodplains of the Congaree to update the 1995 Flood Insurance Rate Maps, and issued its preliminary plans in August 1999 for public comment, which, like earlier maps, showed no floodway on the landward side of the Manning Levee,

an agricultural levee. But when the new maps were issued and became effective in 2001, Columbia Venture realized that cold water had been thrown on its plans by a new floodway designation affecting Green Diamond on the far side of the levee. For those unfamiliar with the distinction, the floodway is the area within a riverine floodplain that by federal regulation must be kept free of obstruction to accommodate the full volume of flood waters, and is calculated by modeling the placement of fill in the fringes of the floodplain.

Columbia Venture's response was to initiate a lawsuit to rescind those unfavorable maps, claiming that FEMA had not followed proper public notice procedures for appeals to be heard and had "unreasonably adopted a different engineering approach as a deliberate effort to restrict development on most of [Columbia Venture's] property." In November 2005 the United States District Court agreed that FEMA had not provided adequate opportunity for the public at large to comment on the proposed base flood elevation determinations because it had not properly published the final proposed changes in the *Federal Register*, and therefore nullified and set aside FEMA's 2001 mapping. The effect of this was to reinstate the 1995 base flood elevation and floodway determinations until FEMA revised them in a manner consistent with federal regulations.

But Columbia Venture also sued the contractor who had prepared the maps for FEMA. The complaint lodged against Dewberry & Davis claimed "civil conspiracy, professional malpractice, injurious falsehood, and unfair trade practices" regarding Dewberry's engineering work. Columbia Venture sought \$110 million in loss of development potential and reduced land value as a result of its property being located within the floodway according to the new study and modeling, and challenged the hydraulic model used by Dewberry as "inaccurate and seriously flawed," per findings of its own civil engineers. The trial court dismissed this complaint in February 2008 because Dewberry & Davis was not liable under the South Carolina Unfair Trade Practices Act, which does not govern the practice of sound engineering (the State board of registration does). However, the matter is up for appeal, and could create a legal nightmare for surveying and engineering firms performing

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mapping contracts for FEMA and other federal agencies. The suit boils down to a disgruntled landowner suing a contractor for damages due to mapping unfavorable to the landowner's plans. *Caveat Contractor.*

The judge's order to vacate the 2001 FEMA restudy and reinstitute the 1995 Flood Insurance Rate Map had the result of opening up more land for development. In the aftermath of the demise of Green Diamond due to public pressure and environmental (flooding) issues, the city of Cayce on the Lexington County side of the Congaree annexed 3,112 acres of the original Green Diamond tract in December 2007 after being approached by the developer to do so. The full tract was not up for annexation as one Columbia city council member had bought about a third of the original tract either for farming or to keep it from being developed, depending upon which account one believes.

The development area has been renamed "Vista Farms," but will be anything *but* farms if Columbia Ventures succeeds in its residential and retail efforts. Currently the developer proposes moving back the very agricultural levees that it previously claimed protected the land from flooding, to accommodate waters flowing through Riverland Park. Its arguments are that such action will decrease flooding and lower insurance rates. Opponents point out that agricultural levees were never meant as floodplain management structures, and cite failures in structure, construction, and placement as root causes of over \$4 million dollars worth of damage in 1976 even before the area was developed.

Meanwhile, the 4th District Court put a stay on the prior judge's vacating of the 2001 Flood Insurance Rate Maps, releasing the maps from limbo. And in June 2008, after proper notification by FEMA, Cayce approved FEMA's restudy maps of the Congaree River under pressure that it would lose its eligibility for flood insurance if it did not—a standard condition in accordance with 44 CFR 60.3 requiring communities participating in the National Flood Insurance Program to accept newer studies and newer maps and to regulate according to them. Obviously this means that some land will be found unsuitable for Columbia Venture's second attempted development. After all, it has *always* been a floodplain. The only issue now is whether floodway restrictions also inhibit land use. *AS*

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original material. It also results in very large files, in case you were wondering, which is its biggest detriment. In contrast, our firm uses JPG files as primary archive format, because the files are about 10 percent the size of a comparable TIF file. JPG files intentionally discard some material during the compression process, and repeated compressions and saves materially degrades the image. Hence, the archivists' objection. But these drawings are archives, not working drawings. We never modify them, nor will we in the future, and thus, do not subject them to multiple compressions. Our experience has been very positive.

File Size

It may occur to you that file size is becoming less important as the equipment we play with gets more powerful. And this is true; however, it is not accurate to say that it is irrelevant. Having the same drawing represented in two equally readable and usable formats, but one being ten times the size of the other, restricts flexibility in the larger file's use with no corresponding benefit. Emailing large files continues to be a problem. It may not remain so in the future, but it is hard to imagine being tripped-up because a file is too *small*. Thus, all other things being equal, smaller file size is better. The most important thing is for surveyors to have files in formats widely available now and in the future, and not controlled by any single entity. TIF, JPG and GIF files all satisfy that criteria, the patents having expired in the U.S. Moreover, multiple viewers are available from multiple sources for each of the formats, and thus are all worthy of consideration for your archives. Those are safe formats.

Case in Point

About a year ago, our firm ceased generating finished drawings (and internal worksheets, for that matter) on "reproducible media." We now print out multiple copies of drawings on bond paper for our clients and others, and also one "for us," which gets scanned and uploaded into our permanent digital archive. Should we need another copy, we print out a copy of that scanned image. The results, if I may say, are impressive.

The digital age brings with it many advantages, and many opportunities for failure. Don't let your survey archives fall into the latter category. It will doom them to irrelevance. *AS*

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