HAYNSWORTH SINKLER BOYD, P.A.

ATTORNEYS AT LAW

160 EAST BAY STREET
POST OFFICE BOX 340
CHARLESTON, SOUTH CAROLINA 29402-0340
TELEPHONE (843) 722-3366
FAX (843) 722-2266

THE PALMETTO CENTER
1426 MAIN STREET, SUITE 1200
POST OFFICE BOX 11889
COLUMBIA, SOUTH CAROLINA 29201-2834
TELEPHONE (803) 779-3080
FAX (803) 765-1243
WWW.HSBLAWFIRM.COM

1201 MAIN STREET
SUITE 2400
POST OFFICE DRAWER 7157
COLUMBIA, SOUTH CAROLINA 29202-7157
TELEPHONE (803) 765-1818
FAX (803) 765-2399

134 MEETING STREET
FOURTH FLOOR
POST OFFICE BOX 1119
CHARLESTON, SOUTH CAROLINA 29402-1119
TELEPHONE (843) 722-7606
FAX (843) 724-8016

REPLY TO:
POST OFFICE BOX 11889
COLUMBIA, SOUTH CAROLINA 29211-1889

WRITER'S DIRECT DIAL NUMBER
(803) 540-7800
bboyd@sinklerboyd.com

75 BEATTIE PLACE
ELEVENTH FLOOR
POST OFFICE BOX 2048
GREENVILLE, SOUTH CAROLINA 29602-2048
TELEPHONE (864) 240-3200
FAX (864) 240-3300

July 20, 2001

Robert F. Shea
Acting Administrator, Federal Insurance
and Mitigation Administration
Federal Emergency Management Agency
500 C Street, SW
Washington, DC 20472

Re: Columbia Venture, LLC

Dear Mr. Shea:

Pursuant to your letter we have mailed the enclosed written Rebuttal to those persons on the attached list. We have mailed (Federal Express) and also faxed a copy of the written Rebuttal to Michael Buckley at Federal Center Plaza, 500 "C" Street, S.W., Washington, DC 20472 and copied those attorneys referenced below.

We have Federal Expressed copies to all out of town recipients for Monday delivery. For the sale of time we have also submitted a copy to Michael D. Brown, general counsel for FEMA by Federal Express.

Very truly yours,

[redacted]

WCB:kdt
Enclosure
cc: Michael Buckley (w/encl)
Michael D. Brown, Esq. (w/encl)
[redacted]
Buford Mabry, Esq. – SCDNR (w/encl)

Attachment

Ms. Kit Smith
Richland County Council Chairperson
2020 Hampton Street
P.O. Box 192
Columbia, South Carolina 29202
FAX: 803-254-4241

Mr. Bruce E. Rucker
Lexington County Council Chairman
212 South Lake Drive
Lexington, South Carolina 29072
FAX: 803-359-8188

The Honorable Robert D. Coble
Mayor of the City of Columbia
1737 Main Street
Columbia, South Carolina 29201
FAX: 803-733-5633

The Honorable Wyman M. Rish
Mayor of the City of West Columbia
1053 Center Street
P.O. Box 4044
West Columbia, South Carolina 29171-4044
FAX: 803-739-6231

The Honorable Avery B. Wilkerson, Jr.
Mayor of the City of Cayce
1800 12th Street
P.O. Box 2004
Cayce, South Carolina 29171
FAX: 803-796-9072

Paul Sandifer, Ph.D., Director
South Carolina Department of Natural Resources
1000 Assembly Street
P.O. Box 167
Columbia, South Carolina 29202
FAX: 803-734-6310

[redacted]
Department of Statistics
University of South Carolina
Columbia, South Carolina 29208
FAX: 803-777-4048

[redacted]
Callison Tighe & Robinson, LLP
P.O. Box 1390
Columbia, South Carolina 29202-1390
FAX: 803-256-6431

[redacted]
Columbia Venture, LLC
Carolina First Building
4875 Forest Drive, Suite 202
Columbia, South Carolina 29206
FAX: 803-743-0673

REBUTTAL MEMORANDUM FOR DETERMINATION OF NO FLOODWAY ON THE RICHLAND COUNTY SIDE OF THE CONGAREE LEVEE

SUBMITTED TO FEDERAL EMERGENCY MANAGEMENT AGENCY

BY
COLUMBIA VENTURE, LLC

JULY 20, 2001

INTRODUCTION

The summaries submitted on behalf of Statistics Professor[redacted]), et al by the Southern Environmental Law Center (SELC) and on behalf of the South Carolina Department of Natural Resources (SCDNR) have a common theme. Neither summary refutes or challenges the empirical or scientific basis for the two dimensional model submitted by appellant Columbia Venture (CV) on February 15, 2001 and clarified by submittals on April 27, 2001. Nor has FEMA refuted, or even criticized, at least in any communication to CV, the methodology or the scientific accuracy of the CV model. No technical data has been submitted or prepared by any party or, to CV's knowledge, by FEMA which refutes the Exponent Model and supporting data submitted by CV. The model relied upon by FEMA, the 1981 USGS/SCDOT model, not only has been refuted technically, it has been disavowed by its sponsor. (See SCDOT letter of June 6, 2001.) This being the case, CV has submitted the only meaningful model which may be considered and it shows, irrefutably, that there is no floodway landward of the Manning Dike on the Richland County side of the Congaree River. Therefore, it must stand as being the most scientifically correct as required by 44 CFR 67 and the results must be accepted during this resolution conference.

[redacted] and SCDNR also have followed their usual, common theme of generalized arguments (often designed to be inflammatory and disruptive) using inaccurate and unsupported data. Both have failed to supply supporting data and computations for their arguments, as required by FEMA regulations. See 44 CFR 67.6. Meanwhile, FEMA likewise has supplied nothing, either orally or in writing, which would indicate disagreement with the conclusions of the CV submittals. FEMA has been consistent only in its refusal to allow any dialogue between its technical contractor and CV's technical consultants, in spite of repeated requests. One might reasonably ask, why? Why would FEMA consistently refuse a technical discussion among engineers designed to arrive at the most correct scientific and technical result? Why has FEMA held its cards so closely when it is charged with the public duty under its own regulations of determining the best scientific answer? Why has it gone silent with respect to CV, the party most directly affected by these proceedings, except, apparently, when talking to the press.

The relationship between FEMA (a public agency) and CV (a member of the public) has become adversarial. CV has been forced to argue in a vacuum because FEMA has not made CV aware of its position in this proceeding nor has it allowed a dialogue to develop among the technical experts. Recent press reports and local anecdotal reports indicate that FEMA has revealed to others, but not to CV, a decision which would not make CV happy, and inferred that a final map would show significant floodway. These leaks to the press have put CV in an awkward position. The inferred results are scientifically wrong, against the uncontradicted evidence and therefore are not acceptable to CV and the local communities. It should be unacceptable to FEMA's general counsel also. It is very much in the public interest that this project go forward with the attendant improvement of the Manning Dike and coincident protection of the state's largest sewer plant and a national blue ribbon, K-12 school. There is very significant local community support. Why is FEMA resisting it so strongly, in the face of uncontradicted evidence that it can be safely done?

Refutation of each of the comments and arguments propounded by [redacted] and SCDNR within the five page limitation imposed is impossible and, as noted, FEMA has provided no comments or data to which CV can respond. CV will, however, treat what it can but respectfully

refers FEMA's general counsel to the February 15, 2001 technical submittal, the April 27 submittals and the summary submitted July 6, 2001 for the uncontroverted evidence of the fact that there is no floodway behind the Manning Dike.

DISCUSSION

I. THE 100-YEAR CONGAREE RIVER FLOW IS 259,000 cfs

SELC (and SCDNR) argue that the 100-year Congaree River flow is in excess of 330,000 cfs (not FEMA's 292,000 cfs) based on historical data that includes years prior to water year 1891. The USGS, which maintains the permanent records for all U.S. water resources, does not recognize data prior to water year 1891 as valid nor does the National Weather Service (National Weather Service Form E-19, Report on River Gage Station, Congaree River, Revised 05/08/2001). [redacted] has continued to use unrecognized and scientifically unsupported data when he is on actual notice from the National Weather Service and USGS that this was improper. Continued use of this kind of information has been highly damaging to CV. Accordingly, FEMA, which may only consider technically valid data, may not consider data prior to water year 1891. FEMA, in fact, has rejected the data and arguments of [redacted] and SCDNR.

Also, the table that SELC includes on page 2 of its summary (7-6-01) does not include the recent water year records or account for very significant modifications to the watershed, including the construction of the Lake Greenwood and Lake Murray dams, both of which provide a significant amount of storage capacity above normal pool elevations that properly may be considered. See FEMA 37 at 4-1. FEMA must follow the more technically correct data provided by SCANA Corporation (the owner/operator of the Lake Murray dam) in its letter to FEMA dated December 15, 2000, reflecting current conditions and noting the additional point that the effect of Lake Murray on flows at the Gervais Street (Columbia) bridge cannot be assessed prior to 1926 due to the absence of comparable data for the Broad River prior to water year 1926. As a result, the 100-year Congaree River flow is 259,000 cfs (not 292,000 cfs) as indicated in the computation provided by CV in its February 15, 2001, submittal to FEMA. (See Exhibit A of February 15, 2001 submittal of CV). While CV believes 259,000 cfs to be more correct, CV has used FEMA's higher (292,000 cfs) flow determination in preparing its models and the result still shows no floodway behind the Manning Dike. These facts would also apply to SCDNR's submittal regarding the 100 year flow.

II. FEMA DID NOT MAP CONVEYANCE BEHIND THE MANNING DIKES IN 1999 AND SHOULD NOT NOW

A. FEMA Should Consider Uncertified Levees As Significant Topographic Features in Mapping.

The Manning levee system does not meet all of FEMA's (44 CFR 65.10) requirements of a certified levee, but it is unquestionable that this levee system is a massive earthen structure that necessarily would materially affect the direction and movement of water in the area. It therefore should be hydraulically modeled as a significant topographic feature to reflect complex flow patterns as required by FEMA's regulations and FEMA 37 page 5-6. This is a significant factor in both determination of Base Flood Elevations (BFE) and floodway.

An extensive geotechnical evaluation of the levee system indicates that soil materials and construction techniques resulted in a levee that provides a very stable structure that likely will withstand a 100-year flood. This fact is in direct contravention to SCDNR's and SELC's unsupported contentions. The City of Columbia and Heathwood Hall have relied on this for many years and the historical record proves them to be correct.

In 1981 the SCDOT authorized the USGS to prepare a hydraulic study for the I-77 bridges including the area of the Manning levee system. The USGS correctly determined that a more advanced two-dimensional hydraulic model was the appropriate tool to model this hydraulically complex area. A properly conducted two dimensional model shows no floodway behind the Manning Dike. The only properly conducted two dimensional model is the one supplied to FEMA by CV, using better data and more advanced computer technology. One can take judicial notice of the dramatic improvement in computer technology in the last twenty years.

B. *CV Does Not Agree That the Manning Dike Will Fail*

CV does not agree that the existing, unmodified levee will fail. In fact, geotechnical evaluations indicate the levees probably will not fail and they have never failed except for the 1976 incident at the sewer plant which was caused by an improperly installed outfall pipe and improper maintenance. These man induced problems have been eliminated and what was once the weakest area is now one of the strongest. Portions of the levees were further strengthened after the 1976 breach.

Furthermore, SELC's comment on positive correlation between multiple levee breaches indicates a lack of basic understanding of geotechnical engineering. True conditions during the 1976 event did <u>not</u> show a correlation between the upstream and downstream breach. In fact, the upstream breach occurred after the downstream one. This is another clear example of SELC distorting irrefutable facts and observed conditions.

Having said that, however, the issue is not whether the levee will fail, but rather how should the floodway be determined assuming the breach scenario posited by FEMA? CV has used FEMA's worst case scenario in its modeling and still finds no floodway. If a breach occurs at the worst case locations prescribed by FEMA, then only a small percentage of the flow (ineffective flow) would be carried behind the levee regardless of the flow rate in the river. During the 1976 event, no effective flow was observed landward of the breach. The velocity of flow behind the levee would be extremely small considering the area behind the levee is at least 8 times wider than the riverbed. It is a simple engineering concept where Q (flow rate) = V (velocity) • A (Area) and V (velocity) = Q (flow rate) ÷ A (area). As the area increases both the flow rate and velocity will go down.

Contrary to repeated assertions by SELC and SCDNR, according to survey data and FEMA's HEC-2 calculations, the 100-year flood does ***not*** overtop the Manning Dike along the Congaree River. SELC takes S&ME's statement out of context. The S&ME report indicates that if a breach occurred along Gills Creek, then the water could enter the levee area south of I-77 and then proceed to the area north of I-77 (backward to the flow of the river). This statement has nothing to do with the levee system (Manning's) along the Congaree River.

S&ME used US Army Corps of Engineers (USCOE) standards in determining reliability of the existing levees. Specifically, S&ME used USCOE Technical Letter ETL 1110-2-556 "Evaluating the Reliability of Existing Levees" dated May 29, 1999 and USCOE Technical Letter ETL 1100-2-555 "Design Guidance for Levees". Clearly, this method provides better results than an arbitrary statistical analysis by [redacted]

Again, SELC wants to rehash old information that FEMA discounted when it released the 9/26/00 map. The breach scenario was dictated by FEMA, which is why CV used it in the 2-D model. Using FEMA's own breach scenario, the CV model shows no floodway.

C. The Historical Record Is Unreliable and Not Helpful

SELC's newspapers accounts are imprecise in location and are not descriptive about velocity. The articles are so unspecific and unscientific that the information is useless. The accounts are worthless technically. Their only fair value is to demonstrate that a flood occurred somewhere in that general location in the very distant past, before the Lake Murray dam. SELC's continued use of what amounts to nothing more than historic curiosities (newspaper accounts and photographs) to sway public opinion is intellectually dishonest. FEMA's mapping process requires it to model current conditions. Furthermore, all of the accounts presented by SELC happened prior to the major upgrade of the Manning levee in the 1950s and '60s. They simply do not represent existing conditions and to continue to use them to confuse the public and for inflammatory purposes is simply wrong. No verifiable accounts of regional high velocity landward of the Manning levee have been made for the 1976 breach.

D. CV's Submission to FEMA Utilized the Same Engineering Approach that FEMA Used

SELC suggests that CV is using something other than equal conveyance reduction to define the floodway. This argument is misleading. CV used the same engineering approach that FEMA used. The amount of flow conveyance in Richland County during an assumed levee breach is insignificant. When the floodway boundary is moved to its proper location, the Manning levee, this does not result in any increased flooding depths in Lexington County. CV has provided computations to support its position, in accordance with FEMA regulations.

Furthermore, SELC has not performed due diligence because information already made public (HEC-2 computer files) indicates that the floodway location in Lexington County will not change and is in accord with the Lexington County and Cayce resolutions, which were adopted by the unanimous votes of publicly elected bodies and which endorse the floodway on the Lexington side shown on the September 2000 preliminary FIRM. CV does not attempt to burden Lexington County with additional floodway and CV's model does not show a more extensive floodway in Lexington County beyond the September 2000 preliminary FIRM. Accordingly, SECL's argument at page 8 of its submission is factually wrong and misleading.

SELC confuses floodway determination tools (e.g., equal conveyance) with the regulatory definition of a floodway. In doing so, SELC is not comparing apples to apples. SELC also ignores one of the primary characteristics of a floodway; i.e., that it returns water to the river.

III. THE BASE FLOOD ELEVATION SHOWN ON THE AUGUST 1999 AND SEPTEMBER 2000 MAPS WERE NOT ERRONEOUSLY LOW.

A. The Correct Flow Number is 259,000 cfs.

As previously stated (Part I at page 2), CV believes the flows established by FEMA are too conservative. Based on SCANA's letter of December 15, 2000, and CV's computation submitted February 15, 2001, the 100-year flood level for the Congaree River should be 259,000 cfs. CV has, however, for purposes of its modeling used FEMA's calculations at 292,000 cfs and, therefore, assumed the resulting BFEs.

B. The September 2000 FIRM Did Not Set Lexington County BFEs Too High.

Contrary to its earlier position in Part II.A. of its submission, SELC disregards FEMA's guidelines for mapping flood plains with levees set forth in FEMA 37, chapter 7. FEMA established the BFE in Lexington County using the HEC-2 one-dimensional computer model with the levee operating as a water diverting structure (substantial topographic feature) per FEMA guidelines. This is a conservative one-dimensional engineering approach that protects the residents in Lexington County if the levee doesn't breach.

SELC also mixes one-dimensional and two-dimensional computational logic incorrectly. SELC, quoting FEMA, incorrectly states that the levee is overtopped by flows of more than 200,000 cfs, relying on a one-dimensional sensitivity test conducted by FEMA (which assumes a range of hypothetical roughness coefficients with a corresponding range of hypothetical flood elevations) that FEMA did not use in making its final determinations of floodway and BFEs. According to survey data and FEMA's HEC-2 calculations, a 100-year flood (292,000 cfs) does ***not*** overtop Manning levee along the Congaree River. This was clarified in the CV's submittal on February 15, 2001. In fact, portions of the existing levee are not overtopped by a 500-year flood event.

Finally, SELC provides no computations or hydraulic modeling to support its conclusory assumptions about flood elevations as required of Appellants by 44 CFR 67.6.

STATUS OF APPELLANTS

CV continues its previous objection to the designation of [redacted] and SCDNR as Appellants. Self designated "Citizen Appellants" [redacted] and the South Carolina Wildlife Federation have never been parties to this proceeding. The real parties are CV and FEMA.

CONCLUSION

There is no floodway on the landward side of the Manning Dike. To find otherwise flies in the face of the most correct science.

Respectfully submitted,

Haynsworth Sinkler Boyd, P.A. [redacted]

Winston & Strawn [redacted]