ATTACHMENT 4

June 6, 2001 letter to FEMA from SCDOT

SCDOT
South Carolina
Department of Transportation

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June 6, 2001

Mr. Michael K. Buckley, P. E.
Director Technical Services Division
Mitigation Directorate
Federal Emergency Management Agency
Washington, D. C. 20472

Dear Mr. Buckley:

This is in reference to the Federal Emergency Management Agency's (FEMA) proposal for the revision of the floodway along the Congaree River in Richland and Lexington Counties in South Carolina. The following is being offered as background information.

Dr. Jonathan K. Lee and Mr. Curtis S. Bennett of the U. S. Geological Survey prepared a two-dimensional model for the South Carolina Department of Transportation (SCDOT) during 1977-79. This model was developed at the request of the Federal Highway Administration for a specific and limited purpose, which was the design of the western section of I-77, which crosses the Congaree River. The results of the model were published in 1981 and the design of the I-77 bridges was adjusted based on the results of this modeling.

The topographic data utilized in the I-77 model was based on 1964 aerial photography, which was produced for the Richland-Lexington Joint Planning Commission. The coverage of the topographic data used in the SCDOT model extended approximately 10,700 feet downstream, measured in a straight line down the flood plain, from the proposed I-77 crossing over the Congaree River.

SCDOT furnished this information to FEMA upon their request in April 2000. It is our understanding that the data from the SCDOT I-77 study was utilized by FEMA in the development of a two-dimensional model using the Corps of Engineers computer program RMA-2V for the broad purpose of a floodway study.

The RMA-2V model starts its computations of the hydraulic conditions at the downstream boundary of the model and assumes a level water surface along that boundary at a predetermined high water elevation. As computations proceed further upstream from the boundary, they more closely approximate "true" flood flow conditions. At some point, they converge to actual flow conditions within the limits of computational accuracy. The RMA-2V program generates its model based on data points read in and interpolated from a SMS file.

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Recently, [redacted] of the consulting firm Exponent, Inc, produced another two-dimensional model of the Congaree River flood plain along I-77 utilizing the RMA-2V program. He had based his model on data from recent topographic surveys from both Richland and Lexington Counties, USGS digital elevation data and included more data within the SMS file. Additionally, [redacted] model encompassed an area approximately 7,560 feet further downstream than SCDOT had utilized in its studies associated with the design of the proposed crossings of the Congaree River as part of the I-77 project.

By encompassing a larger area, utilizing updated topographic data and including more data within the SMS file to generate the RMA-2V model, a technically improved and more accurate model can be produced over a more extensive study area than a model generated utilizing SCDOT's I-77 project data.

We offer this information for your consideration as you evaluate the issues concerning the proposed revision of the floodway along the Congaree River near I-77.

Sincerely,

Robert I. Pratt

Robert I. Pratt
Director of Preconstruction

RIP:cah

CC: Chairman Morgan Martin
Executive Director Mabry
[redacted]

File: PC/CAH