



Steven H. Emerman, Ph.D.
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Dear Matt and Wesley,

Thank you again for your very interesting presentation on the proposed Area 3 stormwater improvements.

I would be very grateful if you could address two questions during your presentation on the proposed Area 4 stormwater improvements on Tuesday, October 20. These questions would also apply to the proposed stormwater improvements for Areas 1, 2 and 3.

Question #1: After the stormwater improvements have been carried out, how will the City and County know whether the improvements have reduced flooding?

This is related to a question that you addressed during your presentation on the proposed Area 3 improvements: Why don't the City and County develop a database of quantitative observations (such as water levels in channels and pipes) that could be used to verify and calibrate the AECOM stormwater model?

My understanding of your answer is that there is a fixed budget that must be allocated between design and construction. The verification and calibration of the stormwater model is a part of the design process. If too much money is spent on design, then there won't be enough money left over for construction. In the case of improvements to an existing stormwater system, it is common to save money on the design (by not verifying and calibrating the stormwater model) and compensate for the uncertainty in the model by being conservative in the dimensions of channels and pipes (for example, by choosing pipe diameters greater than would be required by



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the uncertain stormwater model.) Please let me know if I have not correctly summarized your response.

My concern is that, without a database of quantitative observations, the City and County will have no way of knowing whether the stormwater improvements have worked. Ideally, after carrying out the improvements, we would like to see a decrease in the frequency of exceeding the capacities of channels and pipes for precipitation events of a given magnitude. If it is found that the stormwater improvements have not worked, then it will be time to reconsider the stormwater model (which would indicate that more money should have been allocated to design prior to construction).

I am concerned about a permanent state in which stormwater improvements are evaluated solely upon complaints from residents. Residents can give up on complaining, which could give an incorrect picture that flooding had reduced. Or there could be a campaign to promote resident complaints (meaning that the same flooding could occur but with more complaints), which could give an incorrect picture that flooding had increased.

I would be happy to help you with a plan for collecting data on water levels in channels or pipes. Of course, the USGS South Atlantic Water Science Center are the experts on this subject.

Question #2: How will the AECOM stormwater model be adjusted as development continues in the Central Park area?

The AECOM report does not clarify what asset the City and County of Charleston now have that is called the “AECOM stormwater model.” I understand that the AECOM stormwater model includes the Central Park development, even though the development does not exist. I don’t understand whether the City and County have the ability to replace the proposed Central Park development in the model with the current configuration of forest and wetlands. Of course, this ability would be necessary for the City and County to evaluate alternative uses for the Central Park site or to evaluate the stormwater impact of the proposed Central Park development.

For example, the AECOM stormwater model does not include the proposed Mark Clark Highway 526 Extension. Do the City and County have the ability to adjust the AECOM stormwater model to include the stormwater impact of this proposed highway? If not, will all future developments be evaluated assuming that the proposed highway does not exist? In other words, will the AECOM stormwater model become gradually less accurate as development proceeds?



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I am looking forward to hearing your responses at the Area 4 improvement presentation on Tuesday, October 20. Please let me know if I can help with anything either before or after the presentation.

Best wishes,

A handwritten signature in black ink that reads "Steven H. Emerman". The signature is written in a cursive, slightly slanted style.

Steven H. Emerman

cc: Betsy La Force, South Carolina Coastal Conservation League
The Honorable Spencer Wetmore, South Carolina House District 115