

## CSRWG 19 June 2008

White

### MEMO

TO: Mr. George Givens

FROM: Nancy White

DATE: June 19, 2008

Mr. Givens: Much to my chagrin, it was pointed out to me that there were typographical errors in my comment submitted June 12. My apologies to all. Hopefully, these notes are clearer.

1) Storm event driven, fecal indicator bacterial loading rates from farm, forest, and urban land uses to surface waters have been found to be consistently higher than recommended for SA waters. Urban watersheds are typically the highest with loading rates exceeding millions of cells (expressed as MPN or most probable number), per acre, per year. A TMDL study on an urban watershed conducted as part of a USDA funded research effort found that even a 99% reduction in the fecal loading rate would not allow the affected closed shellfish bed to be reclassified as conditionally open.

2) Storm event driven bacterial loading rates are not well correlated with development density or extent of impervious surfaces. Fecal indicator bacterial loading rates have been found to be significantly correlated with rainfall rates, septic tank density, and ditching density.

3) Fecal indicator bacterial levels are not considered a good mechanistic explanatory variable of a watershed or drainage area's potential to affect water quality in the receiving water body. Our research has found good water quality in a watershed with high levels of imperviousness (exceeding 24%) which had been mitigated using innovative conservation and hydrologic reconstruction techniques, and we have documented poor water quality and high bacterial loading rates in a watershed with less than 12% imperviousness, extensive buffers, and ditching.

4) In studies tracking the sources for the bacteria, some human signature was found, but at very low levels and not definitively linked to septic tanks; so while septic tanks are an issue of some concern, there are questions requiring further study before they are exonerated or implicated. While the sources of the bacteria in this case were considered to be predominantly from wildlife, this condition does not reduce the threat to human health, as wildlife can be a source of pathogenic bacteria.

4) Coastal hydrology is complex and has been made more so by the ditching and draining implemented with forestry and farming activities at the turn of the century and continued with each succeeding land use change. This complex landscape with its routine interaction of surface and ground water, wind driven tides and storm event flows makes effective management a significant challenge.

#### Relevant Citations:

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Line, D.E. and N. M. White. 2001. Efficiencies of Temporary Sediment Traps on Two North Carolina Construction Sites. TRANS of the ASAE 44(5): 1207-1215.

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