NCITEC Project Information

Principal Investigator: Charles Swann (P.I.), Chris Mullen (Co-P.I.)

Title: Predicting Erosion Impact on Safety of Highway and Railroad Bridge Substructures

Abstract: Long-term bridge functionality is dependent on a number of factors including engineering components as well as the geological substrate on which the bridge is founded. This study investigates the scour vulnerability in regards to bridges within a 250 square mile study area centered on the town of Blue Springs, Mississippi, home of Toyota Motor Manufacturing, Mississippi (also including a portion of the future I-22 corridor). The study will consider the extent of stream scour beneath existing bridges, bridge age, substrate characteristics and erosion rates. Select bridges with evidence of significant scour will be modeled in detail to better evaluate the stability of the structure by integrating geological conditions at the bridge with the structure itself and vulnerability to natural hazards. Erosion rates will also be compared to the geological unit on which the bridge is constructed in order to test the hypothesis that scour severity can be predicted on the basis of the geological unit. These data should be useful to better define geographic areas of increased erosion rates that bridge engineers can incorporate into future bridge design, aid in formulating a strategy for protection from this natural hazard, and to evaluate the need for enhanced bridge inspection practices. The goal of the project is to ensure safety and long term performance of the multimodal transportation system.

Start Date: June 1, 2013

End Date: December 31, 2015

Project URL (if applicable):

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