Análisis de rotura de dique durante el huracán Katrina 2005 [

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text (article)

Analítica

Hurricane Katrina was the costliest and one of the deadliest natural disasters in the history of the United States. It resulted in catastrophic loss of life and left thousands without homes. Levee breaches surrounded the city of New Orleans as a result of the massive storm surge. Many levee failures occurred including the 17 th Street Canal, Industrial Canal, London Avenue Canal, and the Inner Harbor Navigation Canal (IHNC). This report focuses on investigating the mode of failure of the south breach on theeast bank of the Inner Harbor Navigational Canal. Computer software Seep/W and Slope/W from Geostudio were used to estimate levee transient flow and critical stability case using Spencer's rigorous method.Results indicate that piping failure mechanism did not occur as computed hydraulic gradients were lower than the critical value. Furthermore, factor of safety against semi-rotational failure is 1.24. Finally, from erosion photos and a semi-empirical solution estimate, a 3 ft of erosion at the toe of the levee occurred that triggered a factor of safety against overturning of 0.94. Additionally, for the same erosion condition, a factor of safety of 1.42 was obtained against translational failure mechanism. Based on the results, it is concluded that the critical mode of failure due to erosion was overturning
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