

Cuenca Presa Guaigui Dam Break Study

La Vega, Dominican Republic

Overview

- Two-dimensional unsteady dam break simulation
- 24 sq. mi. model domain



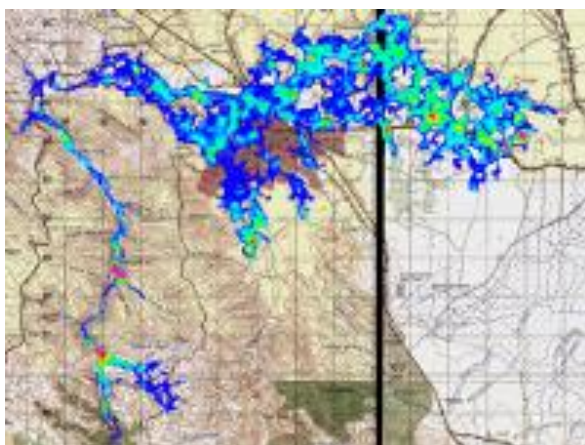
Applied Software

- SMS (TUFLOW)
- WMS

Problem

A new dam is proposed to be built in Rio Camu, not far upstream of the City of La Vega, Dominican Republic. As part of an environmental impact study for the dam, the National Institute of Water Resources (INDRHI) in the Dominican Republic contracted with Aquaveo to determine the inundation limits of the proposed dam should it experience a catastrophic failure.

Solution



In order to determine the flood extent of a hypothetical dam failure at the proposed Guaigui Dam, Aquaveo developed a two-dimensional unsteady flow model using TUFLOW in SMS. The model used 30 meter grid cells to cover an area of approximately 63 sq. km. (24 sq. mi.). 64.4 million cubic meters of water (52,200 ac-ft) were allowed to spread across the model domain in several different dam break

scenarios. Flood depths were computed by the model at a 15 meter spacing.

Benefits

Using a two-dimensional unsteady flow model to represent the dam breach allowed us to account for available water volume and represent the two-dimensional behavior of the flood wave. Setting up the model with SMS allowed us to create meaningful visuals of the dam break scenarios and post-process results to develop other datasets including the maximum inundation extent.