

## HYDROLOGICAL MODELING OF MAYLANCO BASIN USING HEC-HMS

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### ABSTRACT

The hydrologic modeling of basins is a critical need in regions that have problems with water supply and water resources planning such as the case of Rocha river basin. Maylanco basin is one of the most important basins of Rocha river basin. Within Maylanco basin, the municipality of Sacaba is located, the urban zone is growing rapidly. On this study we set-up the model of Maylanco basin using the software HEC-HMS which is used to model storms, maximum flows in a specific period of time. We gathered data of the study area such as precipitation from 1980 to 2016, digital elevation models and thematic maps. We analyzed and classified the spatial data to obtain additional information needed as input to the model. We established return periods of 25, 50, 75 and 100 years to run the HEC-HMS to obtain maximum river discharge within the basin. We carried out monitoring campaigns of river discharge within the river network to be compared simulated values. Furthermore, we used records from rain gauge stations recently installed and analyzed the rain data for the first three months of 2018. These data was used to calibrate model's parameters. We selected as a control point the rain station "El Abra" that records water level every 15 minutes. We compared the accumulated river discharge simulated by the model against the estimated volume using the records of water level and flow measurement, obtaining a difference on 9%. Currently the calibrated model can simulate the hydrographs of the sub-basins to determinate de variability of hydrologic responses within Maylanco basin. This model can be used to predict future storms and propose flooding countermeasures to be considered for future land use plans.

**Keywords:** Maylanco Basin, Sacaba, Río Rocha, HEC-HMS, Hydrologic Model.

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