

Improving the Accuracy for the Long-Term Hydrologic Impact Assessment (L-THIA) Model

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ABSTRACT

Urbanization increases runoff by changing land use types from less impervious to impervious covers. Improving the accuracy of a runoff assessment model, the Long-Term Hydrologic Impact Assessment (L-THIA) Model, can help us to better evaluate the potential uses of Low Impact Development (LID) practices aimed at reducing runoff, as well as to identify appropriate runoff and water quality mitigation methods. Several versions of the model have been built over time, and inconsistencies have been introduced between the models. To improve the accuracy and consistency of the model, the equations and parameters (primarily curve numbers in the case of this model) were reviewed and documented. Two methods were pursued to conduct this work. First, curve numbers used in the current L-THIA model and related papers were identified and summarized. Second, the spreadsheet and code of this model were reviewed to correct the logic in the L-THIA model. A new Curve Number spreadsheet was built to summarize the curve numbers with clear descriptions. The values of the curve numbers remained the same in the model. Improved logic in combining curve numbers has been added to the model, while errors in code in the model have been fixed. In conclusion, the accuracy and consistency of the L-THIA model were improved by validating the curve numbers and better defining the code logic. Tests are needed to examine the updated version of the L-THIA model.

KEYWORDS

Long-Term Hydrologic Impact Assessment model, curve number, Low Impact Development, accuracy, hydrologic modeling