

Abstract

Going with the Flow: The Effect of Stream Width on Rate of Flow
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The purpose of this experiment was to test how the constantly-shifting widths of streams affect how fast a flood will drain. The hypothesis that “if the stream bed was wider, then it will take less time for a flood to drain because the stream has increased volume capacity,” was formed through research. A virtual reality sand table was used to model a local stream and its surrounding landscape. After calibrating the table to the correct depth, five different experimental groups were scale-modeled (1 cm = 1 ft) and then tested, starting with an 8 cm stream and increasing by increments of 2 cm between each group. The landscape was then locked and flooded for 5 seconds. An iPad was mounted to the top frame of the sand table and used to record each trial. The collected video footage was used to analyze the elapsed time from the end of the flood until the landscape returned to its original state. This process was repeated 5 times for each experimental group. At the end of data collection, the results partially supported the original hypothesis. Every group’s average time decreased from the group before it with the exception of the 12 cm stream. The extremes in this experiment had a larger change (13.56%), than the groups in the middle (4.77%), but still had an overall decrease. This data can be used to shed light on how to protect the natural environment while safely developing watershed areas in the future.