

# Total Sediment Yield in Distributive Watersheds

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## Abstract

Estimating the total sediment yield for a watershed can be completed using one of several well-established methods and tools. In general, for dendritic watersheds, these methods produce reasonable results that are relatively easy to reproduce by others. In a distributive watershed, complex hydraulic conditions significantly complicate the analytical process of estimating total sediment yield.

Recent advances in two-dimensional models coupling watershed hydrology and river hydraulics provide improved capabilities to simulate the complexities of distributive watersheds and the total sediment yield of these watersheds. Output from a two-dimensional model is coupled with other spatial data sets in a GIS-based tool for the calculation of total sediment yield at any point in a watershed. The GIS-based tool implements total sediment yield calculations in accordance with procedures adopted by the Flood Control District of Maricopa County. Watersheds with average annual sediment yield estimated from measured data are simulated using the GIS-based tool along with other methods of indirect verification to validate the analytical process and reasonableness of the results.