

## Category I – Hydrology, Climatology & Hydraulics

### Sediment Storage and Routing in the Matilija Creek Basin, Ventura County

#### Principal Investigator:

Dr. G. Mathias Kondolf  
Dept of Landscape Architecture &  
Environmental Planning  
University of California  
Berkeley, CA 94720-2000  
Phone: 510-644-8381  
Fax: 510 643 6166  
[kondolf@uclink4.berkeley.edu](mailto:kondolf@uclink4.berkeley.edu)

#### Executive Summary:

Introduction: The Ventura River in Southern California historically supported one of California's southern-most runs of endangered anadromous steelhead trout, *Oncorhynchus mykiss*. Much of the former steelhead habitat was cut off in 1948 by construction of the Matilija Dam on Matilija Creek (55 mi<sup>2</sup>), one of the river's two principal forks. The Ventura River basin is underlain by highly erodible Tertiary marine sediments, is tectonically active, and has very high sediment yields. Matilija Dam is nearly full of sediment and is structurally unsafe. To address the dam-related issues, US Geological Survey and Bureau of Reclamation are conducting a feasibility study to remove the dam, which would re-open Matilija Creek to steelhead trout. Excessive levels of fine sediment have been documented to negatively affect spawning by salmon and trout, raising questions about how steelhead trout have historically prospered in drainages with high sediment yields such as Matilija Creek, and whether steelhead can successfully reestablish there. To understand the relationship among sediment supply, transport, in-channel storage, and fish habitat, we investigated the processes and timing of sediment delivery to the streams that constitute potential habitat for steelhead trout.