{excerpts from}

Movement of water through the thick unsaturated zone underlying Oro Grande and Sheep Creek Washes in the western Mojave Desert, USA

John A. Izbicki · John Radyk · Robert L. Michel

…recharge occurs from infiltration of streamflow in intermittent streams in the upper Mojave River basin, in the western Mojave Desert, near Victorville, California. Chloride, tritium, and stable isotope data collected in the unsaturated zone between 1994 and 1998 from boreholes drilled in Oro Grande and Sheep Creek Washes indicate that infiltration of streamflow occurs to depths below the root zone, and presumably to the water table, along much of Oro Grande Wash and near the mountain front along Sheep Creek Wash.

Differences in infiltration at sites along each wash are the result of hydrologic variables such as proximity to the mountain front, quantity of streamflow, and texture of the subsurface deposits. Differences in infiltration between the washes are the result of large-scale geomorphic processes. For example, Oro Grande wash is incised into the Victorville fan and infiltration has occurred at approximately the same location over recent geologic time. In contrast, Sheep Creek Wash overlies an active alluvial fan and the stream channel can move across the fan surface through time.

Along Sheep Creek Wash, the most rapid infiltration occurs in upstream reaches near the mountain front. Sheep Creek Wash flows as a result of precipitation and runoff in the San Gabriel Mountains, and surface flows in the wash are larger and more frequent near the mountain front. The alluvial deposits near the mountain front consist of cobbles and gravel in a matrix of coarse sand, and few subsurface clay layers impede the downward movement of water.