

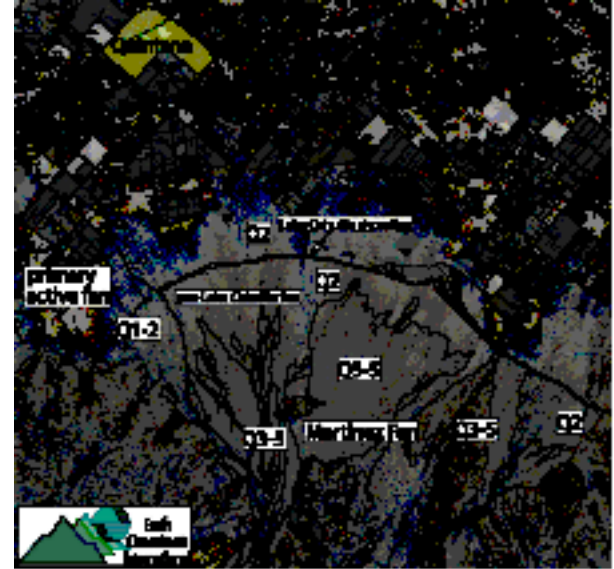


# ALLUVIAL FAN FLOOD HAZARD MAPPING FOR DEVELOPMENT PLANNING

## Coachella Valley, Riverside County, California

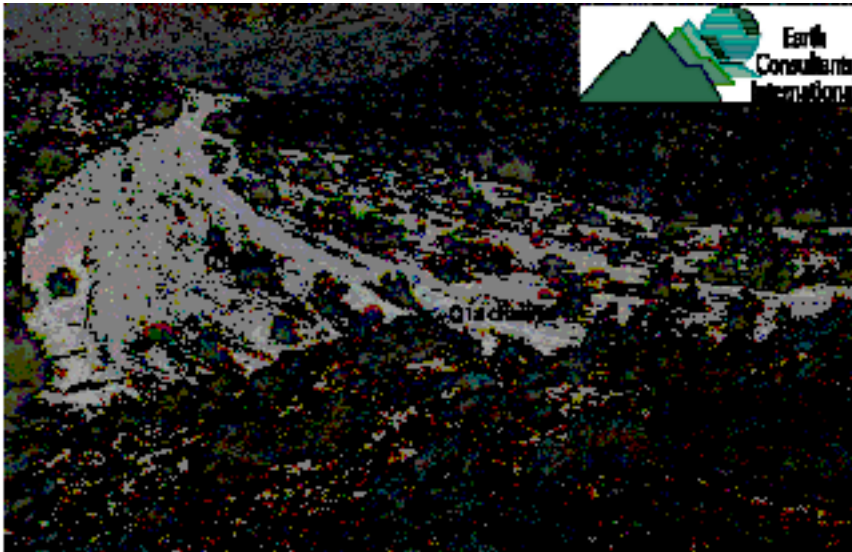
### PROJECT DESCRIPTION

Pardee Development's Quintana Project (Kohl Ranch) lies at the lower portion and distal end of the Martinez Canyon alluvial fan. The flood hazard posed by the fan was of concern to the development planning team and the regulatory authorities. Therefore, as part of the development planning and permitting process, ECI was retained to undertake a geomorphic assessment of the fan's geologic history, as a means of determining the flood frequency on various portions of the fan, and to quantify flood volume discharge within the channels.



Geomorphic mapping of the Martinez Fan to differentiate alluvial fan surfaces as a basis for later quantitative analysis of surface ages.

Field reconnaissance to confirm the air photo interpretations and to refine the active channel boundaries.



### SOLUTION

Earth Consultants International utilized stereo aerial imagery to map the Martinez fan's geomorphology, identifying active and inactive channels and a suite of fan surfaces using various morphometric indicators visible on the photos. This preliminary map was supplemented with reconnaissance-level field mapping, used also to develop a field sampling program that would generate quantitative data needed for surface age determination. ECI geologists used surface roughness, clast weathering, desert varnish rubification, carbonate rinds, and soil profile development to generate a surface age chronology table. ECI also prepared long and across channel profiles and stream power calculations to determine flow velocities and volumes in the active channels. The results of the analysis were used by the development planners to construct flood protection basins and channels, and to design the development onto areas with a >1000 year flood risk.



Lake Cahuilla shoreline berms and lake bed deposits provided high-resolution age control.



Degree of clast weathering provided another tool used for relative age assessments.

