

ABSTRACT FORM FOR 1998 GSA ANNUAL MEETING

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No. 13277

GEOMORPHIC RESPONSE TO MILITARY TRAINING IN THE MOJAVE DESERT

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From 1942 to 1944, the US Army used the Mojave Desert as a training ground. The Army's presence at Camp Iron Mountain, located on an alluvial surface extending to the east of Iron the Mountains, is visible in the form of tank tracks, rock outlines of roads, walkways and tents, and other artifacts. The Army altered ephemeral drainage networks by building berms and roads. Because its history is well constrained, Camp Iron Mountain is a unique location to study natural and human influences on geomorphology at different temporal and spatial scales.

In order to understand the small-scale geomorphology, and to interpret the ^{10}Be and ^{26}Al measurements we are currently making, we made topographic maps, at 10 cm contour intervals, of eighteen, 3600 m² plots located near Camp Iron Mountain. We surveyed 6 control plots (CP) randomly chosen from outside the camp, 6 walkway-disturbed plots (WP) randomly chosen from within the camp, and 6 roadway-disturbed plots (RP) randomly chosen from within the camp. Preliminary results show average channel depths are 8.80 cm +/- 1.24 cm for CP, 7.05 cm +/- 1.28 cm for WP and 6.88 cm +/- 1.46 cm for RP. Average channel widths are 2.02 m +/- 0.29 m for CP, 1.36 m +/- 0.29 m for WP, and 0.94 m +/- 0.29 m for RP. CP average channel area is 733 m² +/- 297 m²; WP average channel area is 432 m² +/- 199 m²; and RP average channel area is 490 m² +/- 366 m². The data show that channels in undisturbed control plots, representative of drainage network long-term behavior, are wider and deeper than those in disturbed plots; from the data we infer that disturbed drainage networks have not fully recovered in the 54 years since the camps were evacuated. Many berms within the camp are still intact, and concentrate the runoff to a few channels or washes. These preliminary data suggest that building berms and roads on sediment aprons demonstrably affects drainage network morphology decades after berm maintenance has ceased.

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geomorphology, military, alluvium, ephemeral

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