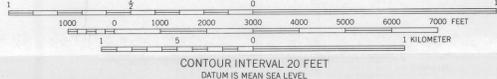




Base from U.S. Geological Survey, 1954

Geology from aerial photographs
taken in 1954 and 1967



INTRODUCTION

The Llano de Albuquerque, comprising most of the La Mesita Negra SE quadrangle, is a long north-south mesa bordered on the east and west by steep gullied scarps. Present-day dominant winds on the Llano are from a westerly direction. Present-day sources of blowing sand (active sand dunes and sand sheets) west of Albuquerque occur on the slopes of the east scarp and in places along the top of the west scarp. Potential sources of blowing sand are two inactive ancient sand dune fields. One covers approximately 17 square miles of the Llano in the southern half of the quadrangle; the other covers about 4 square miles in the northern part of the quadrangle. Areas of active and inactive sand were determined by observations made during geologic mapping, and by aerial photograph interpretation and later spot field checking.

ACTIVE DUNES AND SHEETS

The active dunes on the middle and lower slopes of the east scarp occur mainly on stream divides and appear to be reactivated remnants of a widespread deposit of windblown sand which formerly covered the scarp. The active dunes along the top of the west scarp have a complex origin. Some are southwest ends of formerly inactive longitudinal dunes (greatly elongated bodies of sand) which have been recently reactivated by wind and gully erosion along the scarp.

Others represent recent accumulations of sand picked up from streambeds at the base of the scarp and dropped at the top of the scarp where the wind decreases in velocity. Still others are a combination of the two types. Some of the active dunes are unvegetated bodies of bare sand, but most are slightly vegetated with grasses and shrubs and have hummocky wind-scoured surfaces. The dunes range in thickness from 2 to 60 feet (0.6-18.3 m).

Because they are genetically related to the scarps, the active dunes are fixed in position and will not migrate long distances downwind. However, the downwind sides of the unvegetated dunes probably do advance and retreat slightly in response to short-term climatic changes. The downwind sides of some unvegetated dunes on the west scarp appear to have advanced several feet in the last 20 years.

Many of the dunes grade downwind into thin sheets of vegetated, but slightly active, sand. The sand in these sheets is generally less than 1 foot (0.3 m) thick and in many places is mixed with silt, sand, and gravel washed from nearby slopes. Disturbance or removal of vegetation from these sand sheets could accelerate wind erosion and lead to severe problems of blowing sand.

INACTIVE DUNES

The inactive sand dunes are greatly elongated

bodies of unconsolidated sand (longitudinal dunes). The sand in the dunes is inactive at present because it is being "held down" by a protective cover of soil and vegetation. Activities by man which would involve large-scale disturbance or removal of vegetation and soil could lead to severe problems of wind erosion and blowing sand. Blowing sand is a problem locally where the soil on some dunes has been breached by recent natural erosion.

The dunes were formed during a dry interval more than 10,000 years ago and are now covered by grass and low shrubs and a soil 1 to 2 feet (0.3-0.6 m) thick. In most places the soil consists of a sandy topsoil as much as a foot (0.3 m) thick and a clayey subsoil 1/2 to 1 foot (0.15-0.3 m) thick. Elsewhere, the subsoil is not clayey but is weakly coherent. The dunes overlie a deposit of gravelly sand 5 to 10 feet (1.5-3 m) thick, which in turn rests on caliche "bedrock." Most of the dunes are 5 to 15 feet (1.5-4.6 m) high, 300 to 500 feet (91-152 m) wide, and 0.25 to 1 mile (0.4-1.6 km) long. The dunes are parallel and trend east-northeast. The crests are about 0.1 mile (161 m) apart. The dune forms are not readily apparent on the ground but are plainly visible on vertical aerial photographs. The dunes in the northern field are more subdued in appearance than the southern dunes and may be older and thinner. Crests of some of the more prominent dunes are shown on the map.

EXPLANATION

- Asu Active blowing sand (active dunes and sheets), unvegetated
- Asv Active blowing sand (active dunes and sheets), slightly vegetated
- Ps Potential blowing sand (inactive longitudinal dunes)—Includes local areas of active blowing sand
- Boundary of sand deposit—Dashed where thin or gradational with other materials
- Crest of longitudinal dune
- X Sand quarry

MAP SHOWING PRESENT AND POTENTIAL SOURCES OF BLOWING SAND IN THE LA MESITA NEGRA SE QUADRANGLE, BERNALILLO COUNTY, NEW MEXICO

By
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1974