



A Voyage: From Crystals to Dunes

The journey of the gypsum begins with gypsum rock high up in the surrounding mountains. Snow and rain melt the gypsum. This gypsum-laden water makes its way to Lake Lucero, the lowest point in the Tularosa Basin. When the water evaporates the gypsum reforms as selenite, the crystalline form of gypsum. Selenite's softness enables it to be broken down easily into small and smaller pieces until it becomes sand.

This journey continues with the aid of wind, which carries the broken-down selenite across the Tularosa Basin. This violent process further breaks down the selenite to smaller pieces and begins the process of saltation and creep. These are processes by which sand moves across dunes. Saltation and creep are two different kinds of suspension. Saltation includes wind picking up a grain of sand and blowing it a short distance. When the grain hits the ground, it moves other grains into the air. Heavier sand grains will creep instead; when they are struck by a saltating sand grain they are pushed forward slightly. Dunes will form wherever wind-dropped sand or grains run into an obstacle.

There are four different types of dunes in the monument. Dome dunes take their shape because they are small and have little vegetation to slow the wind speed. This causes the sand to move at much faster speeds and take a less defined shape. Barchan dunes have the majority of their sand in the middle portion, causing the arms to move much faster than the rest of the dune. Transverse dunes are thick, tall mounds of sand that form very close to one another, giving them the appearance of long lines across the dunefield. Parabolic dunes form because vegetation anchors the sand in the arms, allowing the middle section to continue its advance.

Size limits of sand grains

Size (mm)	Size (inches)	Type
> 4	> 1/6	Pebble, cobble, boulder
2 - 4	1/12 - 1/6	Granule
1 - 2	1/25 - 1/12	Very coarse sand
1/2 - 1	1/50 - 1/25	Coarse sand
1/4 - 1/2	1/100 - 1/25	Medium sand
1/8 - 1/4	1/200 - 1/100	Fine sand
1/16 - 1/8	1/400 - 1/200	Very fine sand
1/256 - 1/16	1/6250 - 1/400	Silt
< 1/256	< 1/6250	Clay

Mohs Hardness Scale

10 - Diamond	
9 - Corundum	
8 - Topaz	
7 - Quartz	
6 - Feldspar	Glass - 5 1/2
5 - Apatite	Steel Knife = 5
4 - Fluorite	
3 - Calcite	Copper Penny = 3
2 - Gypsum	Fingernail = 2 1/2
1 - Talc	

