

*Welcome to Earth Matters...field notes on the geology of New Mexico's enchanting landscapes.*

*Celebrating Earth Science Week, I'm Talon Newton.*

If you've ever driven around southern New Mexico near Alamogordo, you've seen the blinding white dunes of White Sands National Monument. The beauty and uniqueness of this strange New Mexican landscape makes the monument a valuable natural resource. Did you know that shallow groundwater only 2 to 3 feet below the surface in between the dunes is largely responsible for holding the dunes in place? In fact, changes in the shallow water table due to manmade or natural causes may have a significant effect on the future movement and location of the dunes.

This sand is made of gypsum, which is a mineral found in sedimentary rocks usually formed from salts left behind when a large body of water evaporates. White Sands National Monument is part of the largest gypsum dune field in the world, and is about 7,000 years old.

Gypsum from old lake beds at the western margin of the Tularosa Basin was transported and deposited by easterly winds. Existing shallow groundwater allowed sand to accumulate to the depth of approximately 30 feet in many areas. The presence of the sand dunes allows rain and snow to infiltrate quickly through the sand and contribute to the shallow groundwater system, which effectively cements the base of the dune field in place.

We are currently studying this shallow groundwater system and how it is connected to the larger regional system. A drop in the shallow water table due to groundwater pumping or climate change could have profound effects on this magnificent landscape in southern New Mexico.

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