

WATER IN SOUTHEASTERN NEW MEXICO

By Calvin Smith

All the water in Southeastern New Mexico is directly or majorly dependent on the Ogallala Aquifer often called the High Plains Aquifer.

It is a relatively shallow underground water table that varies from a few feet to 1,000 feet in depth and from 400 feet below the surface in the north to seep springs on the southern end of the Llano Estacado. However, wells are commonly between 100 to 200 feet deep on the Southern High Plains. One of the largest aquifers in the world it encompasses an area of approximately 175,000 sq. mi. from WY and SD on the north through portions of NB, CO, KA and OK down to eastern NM and the western edge of Texas on the south. It was named by N. H. Darton from its type locality of Ogallala, NB in 1898.

The deposit from which the water is found dates back to the Late Miocene into the Early Pliocene when the Rocky Mountains were still being formed. Erosion from the uplift provided alluvial and Aeolian sediment that filled ancient channels being cut that ran generally south easterly and were gradually covered forming the underground water source. On the surface today there are many tributaries that form the headwaters of some of the major rivers found in TX, OK, KA and NB. The formation consists of coarse sedimentary rocks in its deeper portions transitioning into finer gravels in the upper depths and is of high, pure quality.

Recharge with fresh water occurs very slowly therefore, most of the extant water is from the Pleistocene and modern usage is far exceeding the reserve with some predictions limiting the life of the entire aquifer to 25 years.

Approximately 30% of the irrigated land in the U. S. and 30% of the nation's ground water is from this region and resource and with steady winds in a semi-arid environment evaporation is a major consideration when the playas do have atmospheric moisture in them. Destruction of the playas, which are the primary recharge vehicles are of limited effectiveness when cultivated for agricultural purposes. The rate ranges from 6 inches per year in the northern areas to .025 inches in the southern reaches. Between the 1950's and 2005 there has been a decline of the aquifer of about 253 million acre feet or almost 10% with less than 3,000 million acre feet remaining with well water dropping drastically in the last few years.

Along the western edge of the Llano Estacado called Mescalero Ridge and known locally as "The Caprock" there are still a few intermittent springs along the north end around the Mescalero Point and Mescalero Sands that were utilized heavily by the first settlers into the region. Several homesteads like Clyde Browning's and Harry Robinson's were centered around what they reported as good, dependable water sources during the latter part of the 19th and early 20th Centuries.

There would have been numerous springs all along the edge of the Caprock during the late Pleistocene as the water table would have been high enough to produce abundant water from the Ogallala formation during that period. There is likewise ample evidence of plentiful water and grassland resources some 18,000 – 12,000 years ago when Columbian mammoths were present as the adults of the species required 35 gallons of water a day and 600 pounds of food a day, essentially grasses as they were grazers unlike the mastodons that were browsers relying mostly on trees and shrubs. Obviously, this is indicative of a totally different environs from the present landscape.

During the current excavations of the Sanderson Mammoth Site approximately 35 miles west of Hobbs, NM, it has become apparent that the animal was deposited in a shallow calcareous silt lakebed that lies on top of the Judkin Formation which dates to 18,000 years ago. Three species of aquatic snails have been found in the soil matrix surrounding the specimen indicating that it was an active shallow lake at the time of the deposition. There have been numerous artifacts from the Paleo-Indian Period, dating back to 13,000 years ago found on top of the exposed calcareous silt remnants, therefore, there may be human activity associated with the Sanderson mammoth. In all probability everywhere there was a small depression in close proximity to the edge of the Caprock it became a pond or small lake that attracted game and thus humans.

As these lakebeds dried up during the Altithermal Period around 7,500 years ago there is evidence of humans digging through the lakebeds into the alluvium water bearing sands to obtain this most essential resource. At Rattlesnake Draw some five miles north of the Sanderson Mammoth Site a circular disconformity about 36 inches in diameter was found in 1965 that went through the Pleistocene lakebed and 3-4 inches of hydrous quartz into the alluvial deposit where water was found 12 feet deep at the time of the excavations. The associated artifacts found mostly on the surface surrounding the draw were late Paleo in age with every artifact and piece of resource material being either reused and/or used beyond its efficiency or effectiveness.

During the Archaic and Neo-American Periods it is clear that water resources were cyclic and occupation was probably seasonal taking advantage flora, fauna and moisture availability.

The Southern Llano Estacado was described on all available maps of the 17th, 18th and early 19th Centuries as, "Void of Wood and Water", which kept settlement patterns in check until Lt. Col. William Rufus Shafter led the 9th and 10th Cavalries into what was to become Lea County, NM in 1875 and discovered "Dug Springs" at what was to become the San Simon Ranch Headquarters and Monument Springs where he built a rock carne to help locate the permanent water. The reports he submitted opened up further exploration and early Anglo immigration into the area as the Native Americans were subdued and water was found to be a few feet below the prairies that could bring up unlimited amounts with the use of windmills.

Windmills today are being abandoned as their original depth is not sufficient to draw water anymore and the cost to improve and/or re-drill is not in the ranchers best interest so many are drilling deep wells and pumping water to the necessary locations to provide for their livestock. Where the soil, which consists mostly of the deflated Judkin Formation, is deep enough for productive farming millions of gallons of water are being pumped out of the aquifer on a daily basis. The lowering of the water table is increasing greatly as data from monitoring wells shows a decrease in the levels from 55 feet in 1950 to 75 feet in 2000 and is now dropping an average of 1 foot per year on the Southern Great Plains.