The paucity of recorded Paleo-American sites around the margins of Paleolake Otero in the Tularosa Basin has always raised the question of whether the geoarchaeological context for buried, intact Paleo-American sites exists in this locality. Here, we describe an undocumented stratigraphic sequence located on the western lake margin of the paleolake. This sequence contains an organic rich horizon or “black mat” that formed during the Younger Dryas (10,900– 9,800 $^{14}$C yrs BP). This black mat is in a sequence of buried geomorphic surfaces dating from ~12,300 to ~9,500 $^{14}$C yrs BP. The formation of this black mat is contemporaneous with other geoarchaeological sites that exhibit a Younger Dryas aged black mat that cover portions of the Clovis age landscape where artifacts and Pleistocene megafaunal remains have been recovered in Arizona, west Texas, and New Mexico. The lack of recorded Paleo-American sites in this locality may be more related to lack of visibility because these surfaces are buried rather than to low human population densities along the lake margin during the late Pleistocene- Holocene transition. Although no artifacts or skeletal remains of the Pleistocene megafauna have so far been found in association with the black mat reported here, the geomorphological context is a promising place to focus future research.