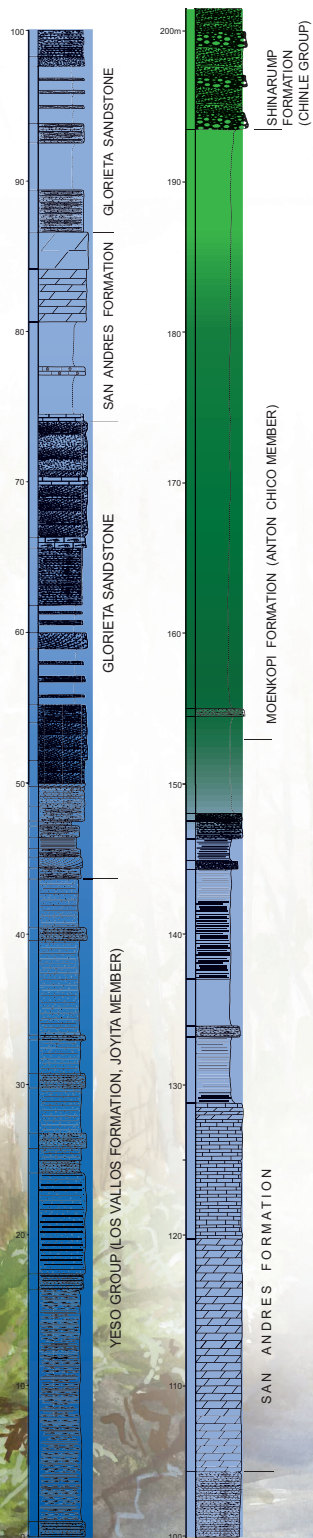
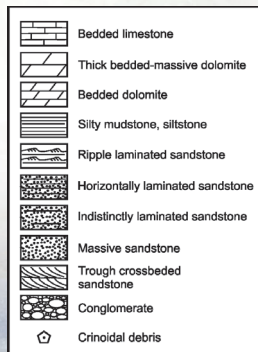


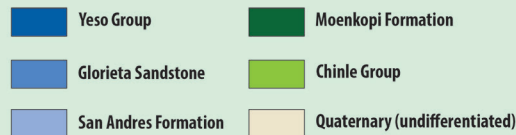
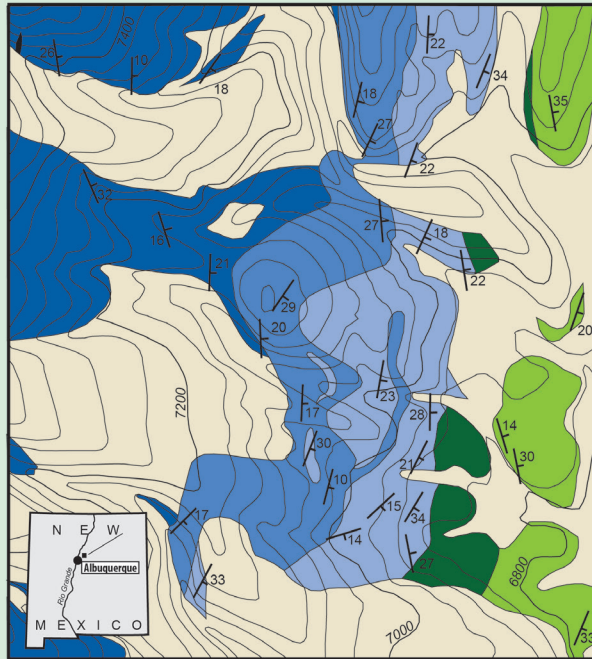


This stratigraphic column is based on measuring each rock layer's thickness, identifying the composition of each rock layer, and grouping layers into rock formations recognized by geologists. The column begins on the lower left with the oldest (Permian-age) rocks, then continues through to the top right, showing the youngest (Triassic-age) rocks. The column thus shows the succession of about 200 meters of Permian-Triassic bedrock at the SMNHC.

Stratigraphic Column of Permian-Triassic bedrock at the SMNHC



Geologic Map of the Sandia Mountain Natural History Center



This geologic map shows the distribution of Permian-Triassic bedrock and overlying Quaternary rock deposits at the SMNHC. It is based on geologic mapping by the New Mexico Bureau of Geology & Mineral Resources in Socorro. The rock formations on the geological map match the rock formations on the stratigraphic column. Lying on top of these rock formations, which geologists call bedrock, are soil and loose gravel of Quaternary age.



Geology of the Sandia Mountain Natural History Center



The Sandia Mountain Natural History Center Geology Trail is a 1.8 mile trail that explores the unique and fascinating geology of the SMNHC. The trail starts near the north end of the parking lot before doubling back and heading up heading up Mud Spring Loop Trail and finishing on the SMNHC Interpretive trail. There are 9 stops along the way with a sign at each stop explaining the geology of that area. For a more in depth look at the geology use the QR codes in this brochure to hear Dr. Spencer Lucas from the New Mexico Museum of Natural History talk about that particular area. For even more in-depth information on the Center's geology, go to NMnaturalhistory.org/smnhc.

1. Fossil Area: This area has cobbles of Pennsylvanian limestone full of the shells of marine animals – crinoids, brachiopods, bryozoans and corals. These cobbles are loose alluvium, not bedrock. The bedrock here is Triassic mudstone.



2. Glorieta-San Andres contact: The contact between sandstone of the Glorieta Sandstone and overlying limestone of the San Andres Formation is exposed here. This surface records the change from land (sandstone) to sea (limestone) during the Permian, about 270 million years ago.



3. Oldest bedrock: Reddish brown sandstone and siltstone (some beds with ripple marks) of the Permian Yeso Group are the oldest bedrock exposed on the Center's trails. These oldest rocks are at the topographically highest point on the trail because of the local geological structure.



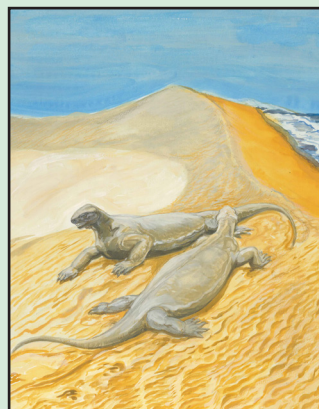
4. Shark's tooth: This block of limestone has a large tooth of the shark *Petalodus*. The block is loose and also contains brown nodules of chert, unlike any of the local Permian limestone bedrock. This identifies the block as a piece of Pennsylvanian limestone that is exotic to its current location.



These four images reconstruct what the SMNHC looked like in the geological past.



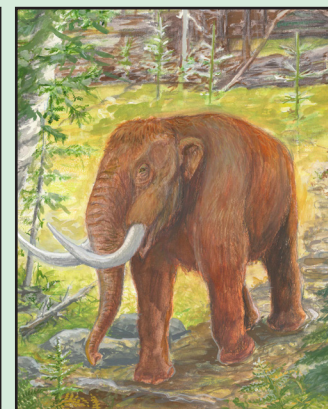
A Permian seafloor, about 270 million years ago.



A Permian coastal desert, about 270 million years ago



A Triassic forest and river floodplain, about 245 million years ago



An ice age forest, about 40,000 years ago.

5. Glorieta Sandstone: The outcrop of Glorieta Sandstone here is about 10 m of sandstone exposed along the canyon wall. These sandstones formed 270 million years ago as part of a vast desert that covered part of the Southwest.



6. Paradise Benches: Limestones of the San Andres Formation exposed here were formed on muddy seafloors during the Early Permian. Above and below are sandstones of the Glorieta Sandstone. The succession sandstone-limestone-sandstone-limestone records the march of desert (sandstone) and sea (limestone) back and forth across the landscape.



7. Strike Valley: Thin beds of reddish sandstone are river deposits of a vast Middle Triassic floodplain. These rocks of the Moenkopi Formation are softer than underlying sandstones and limestones and overlying



8. Overlook: The view to the north/northwest shows the basic geological structure of the SMNHC. The center sits near the base of the vast dip slope of the Sandia Mountains, which is underlain by the Pennsylvanian limestones exposed at the crest of the mountains. The trail apex is on the cuesta formed by Permian sandstone and limestone along the SMNHC's western border. Buildings of the center sit in the Triassic strike valley, and the overlook is on the Triassic cuesta along the SMNHC's eastern boundary.



9. Triassic cuesta: Late Triassic sandstone and conglomerate form a ridge (cuesta). These 230-million-year-old rocks represent huge, Mississippi-size rivers that flowed from what is now Texas to a seashore near what is now the Utah-Nevada border.

