What is our Open Space?

by Rusty Goetz, FHVA Director for Open Space

As a geologist I was drawn to New Mexico because of its beauty, diversity, and complexity of its landforms, it's wildlife, and the cultures of its people. I love Four Hills Village and it's adopted Manzano Open Space because it includes all these features.

When you travel across FHV you can see and traverse rocks that represent a vast spectrum of time and dynamic history. If you go up to the Manzano-Four Hills Open Space you can walk over, or sit on the pink and gray "Sandia granites" that were created deep in the earth more than a billion years ago. Today these rocks form the cores of the Four Hills, Sandia, and Manzano Mountains. These ancient granites were uplifted and broken by huge N-S and NW trending faults when Rio Grande Rift began to form 35-29 million years ago. This rifting of the Earth's crust created N-S basins that are tens of thousands of feet deep and extend in a chain from Mexico to central Colorado. Albuquerque Basin is one of these.

About 15 million years ago a great mountain forming event called the "Basin and Range Orogeny" stretched and uplifted the entire SW portion of the US. Albuquerque and the western half of the state were pushed upward over a mile. More great faults formed and many volcanoes erupted along these faults across the central and western portions of the state. This rending of the earth is continuing today but more slowly.

You can look west from FHV and see evidence of all this drama. Rather than cutting out a valley for itself, the Rio Grande has been trying to fill in the basins of Rio Grande Rift. These deposits of sand and shale are now aquifers and the reason why we have so much good water. 70 miles away on the horizon you can see cone-shaped Mt Taylor which is a large "stratovolcano". It erupted violently 3-2 million years ago much like Mt St Helen. Lower your vision a little and you will see the "fissure volcanoes" of the West Mesa which poured out flat flows of basalt, like those in Hawaii, from 200,000 to 70,000 years ago. These now form the cliffs decorated by thousand year old pictoglyphs.

Walk along the east and north sides of FHV and you will see evidence of even younger geologic activity. Here the ancient and active fault system of Tijeras Canyon has moved the Four Hills and Manzano Mountains sideways as well as both up and down past the Sandia Mountains (is it chance that English translation of "Tijeras" is "Scissors"?). Erosion along the weakened rock within this fault zone has created a long, deep and narrow canyon that focuses storm runoff capable of moving large boulders as well as huge amounts of sand and gravel. These deposits form the large "alluvial fans" and the channeled arroyos that both feed and cut into them. Today the City is actively seeking to control these sometimes catastrophic floods by deepening the downstream catchment basins and by building long high bridges over the arroyos (like the Four Hills Rd bridge) that look too large until you measure the actual scale of these flooding events.