HIDDEN BENEATH THE SURFACE...

Suddenly, the intensity of eruptions escalated, beginning the second stage of volcanism at Hole in the Wall. Three major eruptive episodes devastated the region during this second phase.

While we usually think of eruptions issuing from a cone-shaped volcano, at Hole in the Wall, the story is quite different. Hidden not far beneath the surface, a mass of magma, crystals, and explosive gasses lay trapped. Over time, pressure within the simmering mass steadily increased. Finally, the enclosing rock could no longer withstand the stress and the ground gave way in a horrendous eruptive explosion. Molten lava and huge fragments of rock were hurled upwards. Blocks of solid rock up to 20 meters across were tossed into the air. Hot blocks, globs of lava and glowing ash littered the countryside, falling in thick layers that welded together as they reached the ground.

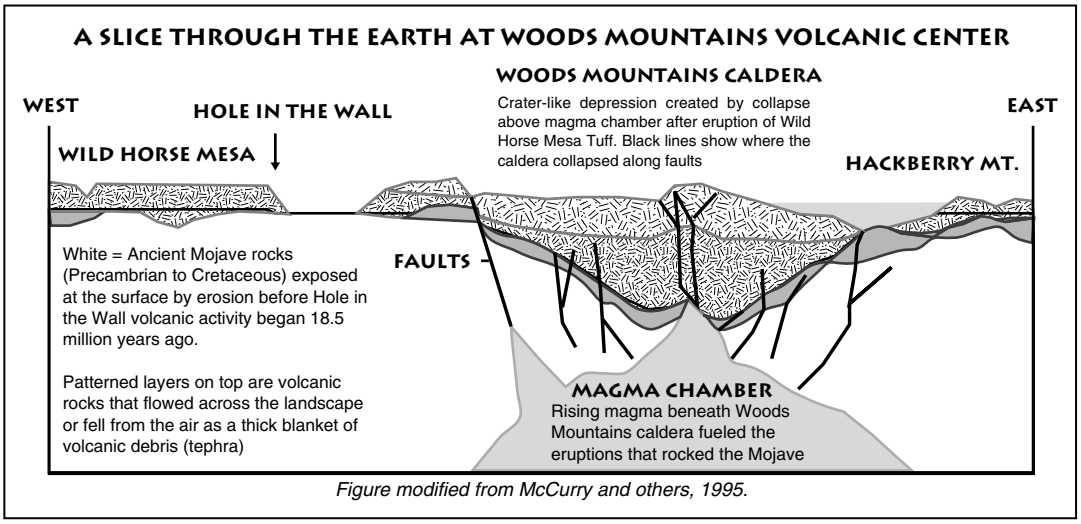

Figure modified from McCurry and others, 1995.

At the site of the eruption, the ground collapsed along numerous faults, forming a huge ring-shaped pit called a caldera. After the collapse, lava and volcanic debris (tephra) partially filled the caldera.

It's hard to imagine the intensity of this event. Of course, no living thing could have survived within the blast zone. No eruption of comparable violence has occurred in recorded human history. Then, for just a brief time, things quieted down on the surface. Below ground, however, pressure began to build again as more gas and magma collected beneath the caldera.

Twice more, when pressure built up to the point where the ground could no longer contain it, tremendous eruptions, only slightly smaller than the first, rocked the Mojave. Each time, thick layers of glowing volcanic debris decimated the landscape and the original caldera collapsed further.

THE LAST GASP

Hole in the Wall's final volcanic gasp lasted from 17.7 to 17.6 million years ago. Soon after the second phase ended new eruptions began. Even though this phase was far more tranquil than the preceding one, its fiery volcanic products once again layed waste to the region. First, viscous rhyolite lava oozed up from the magma chamber below, bowing up the caldera floor. Some of the slow-moving lava found its way through vents to the surface, where it squeezed up, toothpaste-like, to form bulbous plugs and domes in and near the caldera. Rhyolite lava flowed out from vents within the caldera, eventually overflowing the rim. Slow-moving lava lobes spread out over three kilometers beyond the caldera. More solid volcanic debris erupted from the caldera, smothering the landscape beneath thick deposits.

While most of the volcanic tuff you see at this field trip stop was produced by the second stage of volcanism, right across the road from the National Park Service visitor center you can see the rocky remains of this final eruptive episode.

Finally, the magma that fed Hole in the Wall's eruptions cooled and solidified, plugging its plumbing for good. Although Hole in the Wall was silenced, just a few million years later a different kind of lava began to make its mark on the Mojave National Preserve landscape at Cinder Cones National Natural Landmark. Why not pay these remarkable cones a visit?