

## The Puhipuhi Basalts

The youngest rocks at Puhipuhi are basalt lavas. These are inert rocks that contain no sulphide minerals such as pyrite or cinnabar. They form a caprock over the Puhipuhi plateau.



## The Puhipuhi Sinters

A sinter is a hard deposit, usually consisting of silica or calcium, that forms in the vicinity of hot mineral springs.



There are several sinters in the Puhipuhi area, some of which were mined for mercury between 1910 and 1944.

The sinters at Puhipuhi are the remnants of ancient geothermal systems that were active between 2 and 5 million years ago. These ancient systems are very similar to the modern geothermal systems currently active around Rotorua and Taupo where hot, mineral-rich fluids percolate upwards and eventually discharge on surface as hot springs and, on cooling, forms sinter.

*Below: Sinter forming around a hot spring (Champagne Pool, Waiotapu, NZ)*



*Below: examples of sinter from the Puhipuhi area*  
*Left, sinter with quartz casts of fossil plant fragments and algae; and right, sinter with alternating bands of cinnabar (opaque red mineral) and opaline quartz. Fine quartz crystals occur in small cavities in the rock.*



*Below, a hydrothermal breccia from the Puhipuhi area. The original sulphide-rich matrix has been oxidised to limonite (iron oxide).*



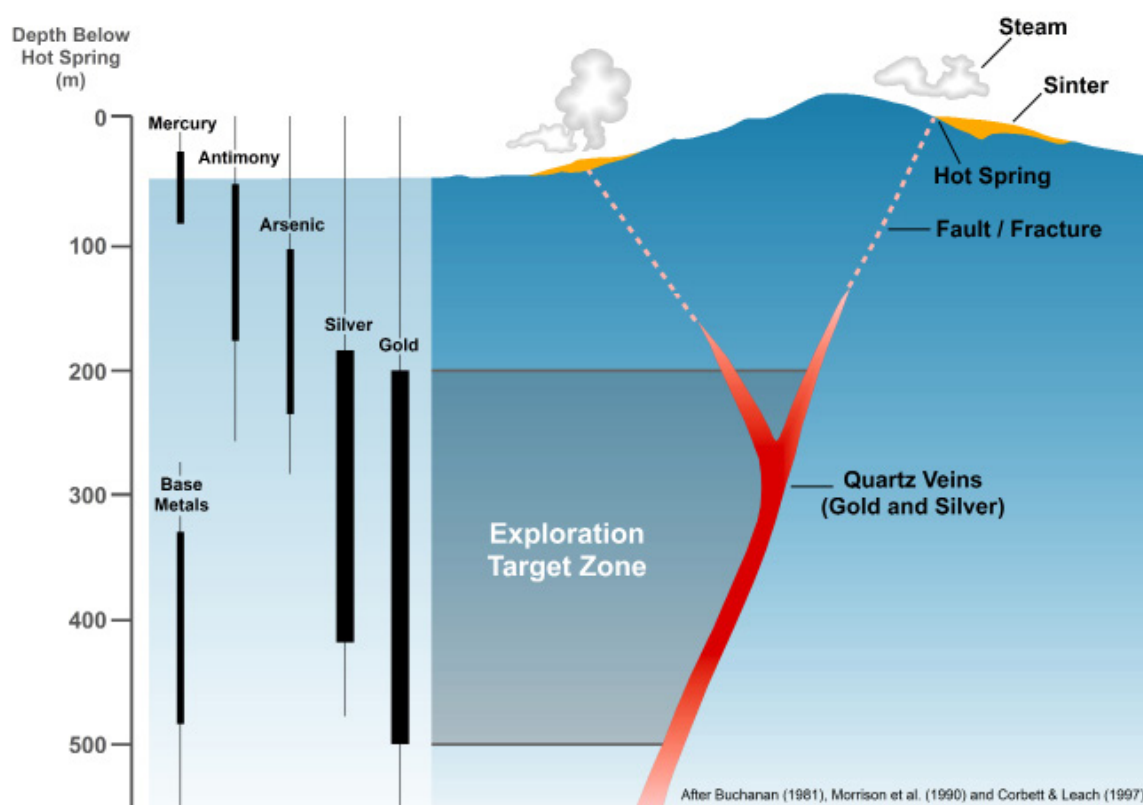
## Why do we think the Puhipuhi Sinters indicate the possibility of gold deposits?

Some of the conditions under which gold can become concentrated are found in geothermal systems, typically at depths of between 200m and 500m below surface. Gold concentrations that form in geothermal settings are referred to as epithermal gold deposits. The presence of sinters in the Puhipuhi area indicates that a geothermal system was once active here, and trace amounts of gold in rocks and soils near the surface provide indications that an epithermal gold deposit may be concealed at depth. In this style of deposit the gold and silver minerals are typically located within subvertical quartz veins.

Evolution's exploration strategy is aimed at discovering whether or not an epithermal gold-silver deposit occurs in the Puhipuhi area.

Mercury is also naturally concentrated in some geothermal deposits, typically only within 100m of the surface. The most common form of mercury is cinnabar, an insoluble sulphide mineral that forms within siliceous sinters. The gold-silver deposits that Evolution is hoping to find are likely to be found at least 200m below surface.

The image below is a cross section through an epithermal environment and indicates the depths at which various metals are most prevalent.



## Contact us

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