The Amaranth Vein, one of several large veins in the Gladstone Hill area of the Waihi gold camp that have yet to be mined, is located just east of the town of Waihi, several hundred metres to the east of the high grade Martha open pit mine, and a few hundred metres to the west of the Favona underground mine. Rocks in the Gladstone Hill area are characterized by strong to intense hydrothermal alteration that is manifested by the presence of abundant clay minerals (muscovite, illite, interlayered illite-smectite, smectite, and chlorite) that have mostly replaced phenocrysts and groundmass. Typical alteration consists of an adularia-dominant assemblage of variable intensity overprinted by sericite and clay in the more extensively altered rocks. A commonly less pervasive propylitic chlorite-calcite-dominated alteration assemblage is also locally present. Pyrite and quartz are ubiquitous throughout the area and vein calcite, though prevalent in the nearby Martha deposit, is restricted to relatively isolated zones in the Gladstone Hill area. Alteration zonation is inconsistent with distance to the Amaranth Vein. Alteration intensity estimates based on textural criteria may be correlated with the abundance of pyrite and hydrous minerals, but like the alteration zonation, exhibits little correlation with distance to the vein.

Lithogeochemistry of hydrothermally altered host rocks about the Amaranth low sulphidation epithermal gold-bearing quartz vein, Waihi, New Zealand

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The Waihi epithermal vein system is located at the southern end of the Coromandel Peninsula, on the North Island, New Zealand. It is the largest of ~50 known deposits in the Hauraki Goldfield, which hosts a number of producing and past-producing, low sulphidation epithermal gold- and silver-bearing quartz veins. Veins presently being mined in the Waihi area are hosted by Miocene to Pliocene volcanic rocks of andesitic to dacitic composition of the Coromandel Group. Two main lithologic host units have been identified in previous studies and consist of a subjacent quartz-plagioclase-porphyrctic andesite and superjacent plagioclase-porphyritic andesite; the former generally hosts wider and higher-grade veins. Much of the Waihi area is overlain by younger ignimbrite, tuff, alluvium, and volcanic ash from the currently active Taupo Volcanic Zone to the southwest.