

## Saguache County

### Crystal Hill District (aka Esperanza District)

The Crystal Hill District was listed in Henderson (1926) and Dunn (2003). Vanderwilt (1947) locates the district on Carnero Creek two miles west of La Garita". Cappa and Wallace (2007) in a much more detailed investigation, show the location to be, rather, about seven miles northwest of La Garita, around the headwaters of Sanderson and Biedell Creeks.

Gold was discovered in 1883 by Mark Biedell, a noteworthy local character, for whom both a mine and a town were named. The town grew quickly, but was gone by the late 1880s (Eberhart, 1969). The Crystal Hill Mine was developed in a breccia pipe of the Biedell quartz latite stock, a quartz latite intrusion dated at a mean age of 33.8 Ma by  $^{40}\text{K}/^{39}\text{Ar}$  methods on biotite and plagioclase (Lipman et al., 1970). The breccia pipe has plan dimensions of 600 by 400 feet, and the pipe extends at least 1,000 feet below the surface as indicated by drill-hole data (Pansze, 1987). The breccia fragments are mostly platy with dimensions of 1 to 12 inches. The poorly indurated matrix consists of quartz, calcite, iron-manganese oxides, and rock flour. Quartz crystals (including amethyst) are abundant in the upper portion of the stock, giving the district its name (Cappa and Wallace, Ibid).

Gold and silver minerals are found mostly below the zone of quartz crystals and are associated with manganese oxide in the matrix of the breccia (Cappa and Wallace, Ibid). The breccia pipe is interpreted as a collapse feature on the basis of the following primary evidence, as listed by (Pansze, 1987): (1) orientation and imbrication of platy fragments, (2) a tilted quartz latite roof slab or "trap door," and (3) volcanoclastic sediments in the upper part of the pipe.

Cappa and Wallace (Ibid) point out that mining continued into the 1980s. Some mining at Crystal Hill was conducted in the 1950s, resulting in production of 587 oz. of gold. Between 1984 and 1986, some 27,000 oz. of gold and 40,000 oz. of silver were recovered from the modern Crystal Hill Mine, which was an open pit-heap leach operation. The average grade of the orebody was 0.043 oz. per ton gold and 0.33 oz. per ton silver (Colorado Division of Minerals and Geology unpublished files, 2003).

Other mines in the area of the Biedell stock include the Esperanza and Buckhorn mines; their production was small. These deposits are located on an east trending fault, just north of the Crystal Hill breccia pipe (Osterwald, 1977). An additional reference is Steven et al. (1977).

Mines listed in the district (mindat.org) include:

- [Beidell](#)
- [Buckhorn Mine \(Adelia; Baltic; Oceanic; Buckhorn; Atlantic; Queen of Sheba; Celtic; Adriatic\)](#)
- [Esperanza Mine \(Valardena; Esperanza; Jesus Marie\)](#)
- [La Garita](#)
  - [Crystal Hill Mine](#)
- [Last Chance No. 1; No. 2 Occurrence \(No. 2; Red Bird Claims; Mexican Lode No. 1\)](#)

Minerals listed in the district (mindat.org) include:

Beidellite	Gold	Quartz
Calcite	Hollandite	var: Amethyst
Chlorargyrite	Magnetite	var: Rock Crystal
Coronadite	Malachite	'Stilbite'

References:

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[www.mindat.org](http://www.mindat.org), accessed September 2015.