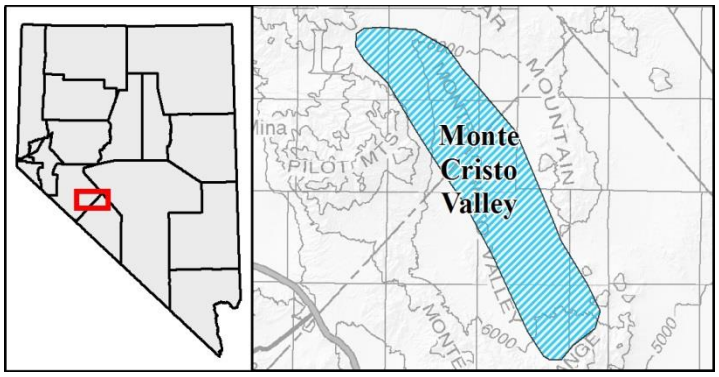
Site Description

Monte Cristo Valley

(Updated 2014)



Geologic setting:

Monte Cristo Valley is located approximately 35 kilometers west of Tonopah, Nevada between the Cedar Mountains and the Monte Cristo Mountains. The geology of the area is primarily underlain by volcanic and sedimentary rocks dated to be between 24 and 11 million years old. The majority of the lithology in the area is made up of white and pink tuff, grey, green, and brown andesite, and white, bedded sandstone composed largely of volcanic debris. Sedimentary rocks make a large part of the rocks found in the area and can be found as unconsolidated sedimentary material and alluvium (Price, 2005).

Kibby Flat, located within the Monte Cristo Valley Geothermal cluster southeast of the Mineral-Esmeralda County line, and surrounding portions of the Monte Cristo Range are currently being evaluated for mineral potential by Miranda Gold Corp. The Kibby Flat project is described by Miranda Gold Corp. as a high-sulfidation gold system with observed alunite-kaolinite alteration consistent with near surface hydrothermal alteration. Field work completed by Miranda Gold Corp. identified clay alteration and locally silicified veins in Tertiary rhyolite tuffs and breccia throughout their project area (Miranda Gold Corp.).

Geothermal features:

AMAX Mineral Exploration drilled several geothermal gradient holes in the area in the 1970s and 1980s. The two hot gradient holes were in the southern part of the valley (T4N, R38E/R38.5E). The first well was 37°C with an uncorrected temperature gradient of 106°C/km and the second was 29°C with an uncorrected temperature gradient of 122°C/km. Several other AMAX gradient holes in other parts of Monte Cristo Valley were warm, with gradients ranging from 38°C/km to 61°C/km (Blackwell and Richards, 2008).

The Great Basin Groundwater Geochemical Database lists a 20.4°C warm spring (38.4, -117.8) that was sampled by NBMG staff in 2008. This warm spring is located north of Kibby Flat at a cattle trough. A 300 ml/min outflow was noted at the time of the NBMG staff visit; however a dry pond next to the trough indicated a stronger seasonal flow in spring. A Na-K-Ca geothermometer reading of 16.2°C (Fournier, 1981) has been noted for this warm spring as well as a Quartz geothermometer reading of 51.5°C (Fournier, 1977) and a Chalcedony geothermometer reading of 19.0 (Fournier, 1981). Three other wells were sampled by NBMG staff – two were found to have insufficient chemistry with few or no analytes. These two wells were Kibby Flat Well which was observed to need a generator to operate and Bettles Well which had no functioning apparatus. Dunham Mill Well, located on the north end of Kibby Flat was observed to have water within 25 feet of the surface. The well was hand pumped to test temperature which was measured at 17.1°C. The site was also noted to be contaminated at depth and was sampled for Silica and cations only (Great Basin Groundwater Geochemical Database).

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Leasing information:

N/A

Bibliography:

Great Basin Groundwater Geochemical Database, Nevada Bureau of Mines and Geology: <http://www.nbmg.unr.edu/Geothermal/GeochemDatabase.html>.

Blackwell, D.D., and Richards, M., 2008, Southern Methodist University (SMU) AMAX database: <http://www.smu.edu/geothermal/georesou/nevada.htm> Accessed January 21, 2014.

Fournier, R.O., 1977, Chemical geothermometers and mixing models for geothermal systems: Geothermics, v. 5, p. 51 – 50.

Fournier, R. O., 1981, Application of water geochemistry to geothermal exploration and reservoir engineering, *in* Rybach, L., and Muffler, L. J. P., eds, Geothermal Systems: Principles and Case Histories: John Wiley & Sons, New York , p. 109 – 143.

Miranda Gold Corp., 2014, Kibby Flat, <http://www.mirandagold.com/s/Nevada_Kibby_Flat.asp> (accessed December 1, 2014).

Price, J.G., 2005, Volcanic and Sedimentary Rocks of the Monte Cristo Range Esmeralda County, Nevada: Nevada Bureau of Mines and Geology Earth Caches, <http://www.nbmg.unr.edu/scienceeducation/earthcaches/montecristorange.html>.