

Minerals of the Bend Deposit, Taylor County, Wisconsin

The Bend deposit is a newly discovered ore body in northern Wisconsin. It is similar in geology to the better known Flambeau deposit near Ladysmith, Wisconsin. The Bend deposit is in the Chequamegon National Forest in Taylor County, about 35 miles southeast of Ladysmith. Its development is of concern to local residents and the Sierra Club. The deposit is completely covered by glacial drift, but has been studied from over 30,000 feet of diamond drill cores recovered from 25 separate holes. The deposit's reserves are estimated at approximately 2.2 million tons yielding 2.77% copper, 0.05 oz of gold and 0.43 oz of silver per ton. Rare elements such as bismuth, arsenic and antimony are also present.

Like other deposits of the region, the Bend deposit is in metamorphosed volcanic rocks formed between 1.6 and 1.8 billion years ago. At that time, the area's geologic setting was similar to that of the today's Mediterranean region, where mountain building and volcanic activity were associated with colliding continents with an ocean basin caught between. The ore occurs in several lenses 5 to 40 feet thick. The upper lenses are copper-rich, while the lower lenses are gold-rich. The ore zones consist mostly of fine-grained pyrite intergrown with tiny grains of chalcopyrite and bornite. Gangue minerals found include quartz, calcite, chlorite and sericite (a fine-grained mica).

Some fascinating rare minerals also occur. One is tetrahedrite, a mineral containing copper, iron, antimony and sulfur. It is a black, metallic mineral which can form interesting crystals shaped like pyramids. The gold is present as gold tellurides, forming the rare minerals calaverite (AuTe), petzite, (Ag.AuTe,) and krennerite (AuAgTe.). These are major ore minerals in some famous western mining camps, including Cripple Creek and Gold Hill, Colorado and Calaveras County, California. These minerals break down easily when gently heated yielding beads of gold or gold-silver alloy. Calaverite is a brassy-yellow to silvery white metallic mineral. It is soft, having a hardness of 2.5 to 3 on Mohs' scale, distinguishing it from pyrite, which has a hardness of 5.5 to 6. It may form slender bladed to prismatic crystals, but is most often massive. Petzite is steel to iron grey massive metallic mineral with a hardness of 2.5 to 3. Krennerite is a silvery white metallic mineral with hardness of 2 to 3, and one perfect cleavage. All of these minerals are in extremely small grains at Bend, but may locally yield some specimen material. Of course, most of this material will go to the smelter if the deposit is ever mined. Hopefully the specimen value of some of the material could exceed the market value of the gold, making it worthwhile for the company to make an effort to preserve it.

Another possibility for collectors at Bend is the supergene zone. A supergene zone is formed when a metallic deposit is exposed to surface weathering and groundwater, concentrating zones highly enriched in such metals as copper. Specimens from the supergene zone are commonly coarser-grained. So far, chalcocite and bornite have been reported from Bend's supergene zone, but other attractive minerals such as malachite and azurite may occur. Since this zone is buried under about 120 feet of glacial drift no detailed collecting can be done unless the deposit is mined.

It is likely that other rare minerals will come to light as deposit is studied further. Collecting will certainly be quite restricted if the deposit is ever mined. My hope, as ever, is that enough collecting is allowed so that specimens from this unique deposit are preserved for posterity.

-Dr. Bill Cordua, University of Wisconsin-River Falls