

# From the Mineral Inventory Files

## The Kemptville Gold Mine: Meguma-hosted Gold with a Difference

I am always on the lookout for gold deposits that don't conform to the generally accepted, bedding-parallel, auriferous quartz vein model(s) usually put forth for Nova Scotia's gold deposits hosted by the Meguma Group. I concluded that the Kemptville gold mine in Yarmouth County (Fig. 1) is one of these 'dissenting deposits' when I worked in that area some 12 years ago. Current exploration of the Kemptville property by AYARCO Gold Corporation further strengthens my conclusion that the gold deposit there is related to massive hydrothermal alteration along a major, ductile shear zone.

Gold was discovered at Kemptville in 1881 and mining began in 1885 from two sites: the Kempt workings on the shore of Kempt Back Lake and the Cowan workings a short distance to the west (Fig. 1). A large swampy area separates the two mine sites, but it was always believed that both exploited the same vein system, which is likely connected under the swamp. Most mining took place between 1885 and 1888 but production continued intermittently until 1918, by which time 3,134 oz. of gold had been won from 4,418 tons of quartz.

Even in the old days, geologists noticed the dissimilarity of the geology of the Kemptville deposit compared to that of other gold districts in the province. E. R. Faribault (see *Nova Scotia Minerals Update* v. 20, no. 2) made note of the very high degree of hydrothermal alteration in the wallrock at Kemptville, and the fact that the alteration and gold-bearing veins are associated with a northeast-trending "zone of dislocation" that extends from Kemptville southwest to Carleton. He also made note of the propensity of the gold-bearing quartz veins to follow bedding along some of their trace but be clearly discordant for the remainder. In 1894, the brilliant, but under-recognized, W. H. Prest described the Yarmouth County mines, and the Kemptville mine in particular, as being

a "wondering maze of angulars and cross leads and inconstant slate-bound main-leads."

My first exposure to this unique deposit was in 1990 when I visited some exploration sites of Acadia Mineral Ventures Limited, which was exploring for gold and base metals in the area between Kemptville and Carleton. I was immediately taken aback by the very high degree of deformation and alteration exhibited in rocks of the Goldenville Formation on their ground. These are easily the most deformed rocks I have seen in the Meguma Group metasediments. A bit of mapping showed that this deformation and alteration occurs over a very extensive area and represents a northeast-trending, ductile shear zone that originates somewhere in the South Mountain Batholith northeast of the former East Kemptville Tin Mine and continues southwest through the villages of

Kemptville and Carleton to intersect the north-northeast-trending Deerfield Shear Zone (Fig. 1). The structure has a minimum strike length of 30 km and a width varying from 200 to 300 m.

It has been known for over a century that free gold occurs in the quartz veins at Kemptville, but what may be most exciting from the current exploration is the recognition that gold also occurs in zones of massive silica and carbonate alteration. In many places the degree of silica replacement is so complete it is difficult to determine where veins end and altered wallrock begins. All these features point to the potential at Kemptville for a mesothermal type of hydrothermal gold deposit, atypical of most Meguma goldfields. Questions remain to be answered, but given the magnitude of the shear zone and widespread association of massive alteration, the area represents an exciting exploration target.

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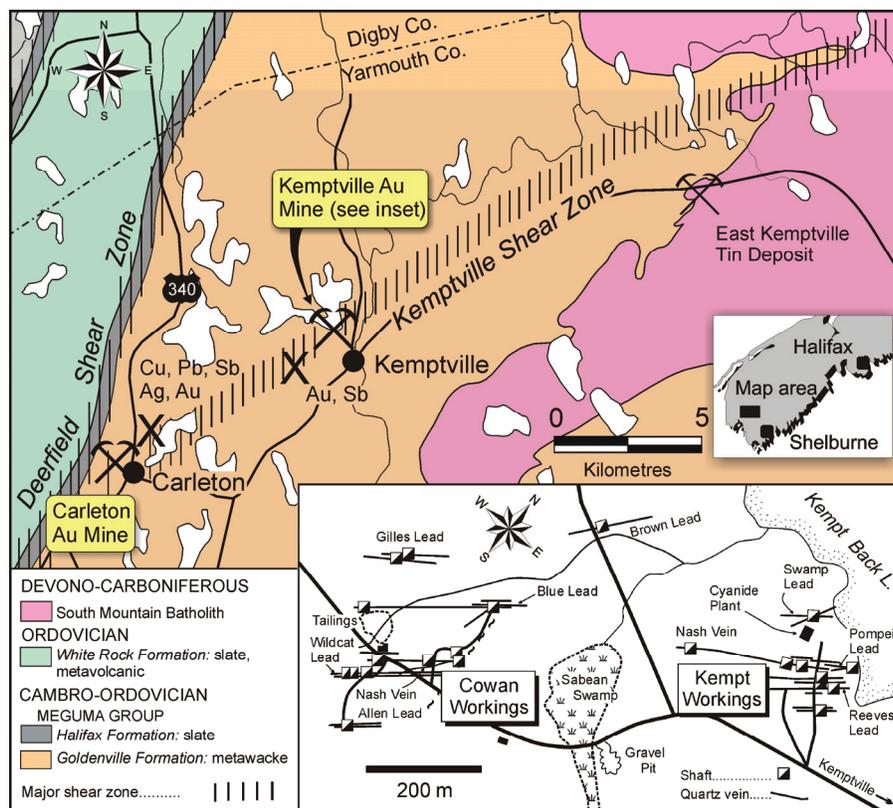


Figure 1. Geology map of the Kemptville area and Kemptville gold mine, Yarmouth Co.