From the Mineral Inventory Files

Flintstone Rock is not Alone

I have been following with great interest the Black Bull Resources Inc. exploration of the Flintstone Rock silica-kaolin property near East Kemptville, Yarmouth County (Fig. 1). Flintstone Rock hosts a substantial volume of silica (quartz) and kaolin (a type of clay mineral) along some 6 km of the northeast-trending Tobeatic Shear Zone. This mineralization style, consisting of silica flooding and massive, low-temperature hydrothermal replacement of the host granite by clay minerals, was not known in Nova Scotia until Shell Canada Resources Limited discovered it during their tin exploration program in the late 1970s. At first the site interested Shell greatly, but they abandoned it once they realized that it is tin- and base metal-poor. However, geologist Guy MacGillivray, who then worked for Shell, remembered the deposit and is the mastermind of the current exploration play. Kudos to Guy.

This article focuses not on the Flintstone Rock deposit, since information on it is readily available from the Black Bull Resources web site (www.blackbullresources.com), but rather on the fact that there are several other similar deposits in southwest Nova Scotia (Fig. 1). For example, while exploring for tin in 1985 Rio Algom Exploration Inc. drilled two holes on a large northeast-trending, VLF geophysical anomaly at Rocky Shore Lake, on the northern contact of the same Davis Lake Pluton that hosts Flintstone Rock. Diamond-drill hole 85-46 was collared in white 'bull' quartz, which continued to a depth of 35.5 m, after which clay and brecciated granite were intersected to 46 m and sheared granite to the final depth of 100 m. Rio Algom recognized the similarity of the site with the Flintstone Rock fault structure, but since both sites had no tin or base metal sulphides the drilling was discontinued.

Acadia Mineral Ventures Ltd. carried out a 17 hole diamond-drill program at the Fanning Lake Cu-Pb-Zn-Sb-Ag-Au prospect north of Carleton in 1988 (Fig. 1). Two of the holes, FL-88-7 and FL-88-13, tested a pronounced VLF geophysical anomaly found nearby. Both holes encountered an east-trending fault and alteration zone consisting of 50 m of brick-red, hematized Meguma Group metasediment and metasediment breccia. This graded into a 30 m zone of bleached, disaggregated rock, totally replaced by clay and silica alteration and intruded by numerous quartz veins. The ultimate thickness of the alteration zone is not known as both drillholes ended before passing through it. As with the other locales, base- and precious-metal levels in the fault zone were found to be low so further exploration was terminated.

This past summer, DNR geologists working on the Southwest Nova Mapping Project recognized abundant boulders of massive quartz and quartz breccia along the lower reach of the Napier River (Fig. 1). The linear course of the Napier River strongly suggests it follows a northeast-trending fault or fracture system. The presence of these boulders indicates that a fault-controlled, silica-kaolin deposit, similar to Flintstone Rock and Rocky Shore Lake, may be present there.

Clay alteration and silica flooding at these sites are localized along some of the many regional-scale fault zones that cross-cut southwest Nova Scotia. It follows, then, that these fault zones are prime exploration targets for this type of mineralization. The very soft, friable rock in these deposits means outcrop will probably be non-existent. Further, since they also contain little or no tin or sulphides, their geochemical expression will also be minimal.

So how can they be found? Probably by a combination of old fashioned boot and hammer prospecting followed by geophysical surveys. First find boulder concentrations of vein- and replacement-quartz, especially in areas coincident with boulders of sheared and mylonitized granite or metasediment. Then, since all the known occurrences have a pronounced geophysical expression, geophysical surveys will provide an idea as to size of the fault zone and degree of development of hydrothermal alteration.

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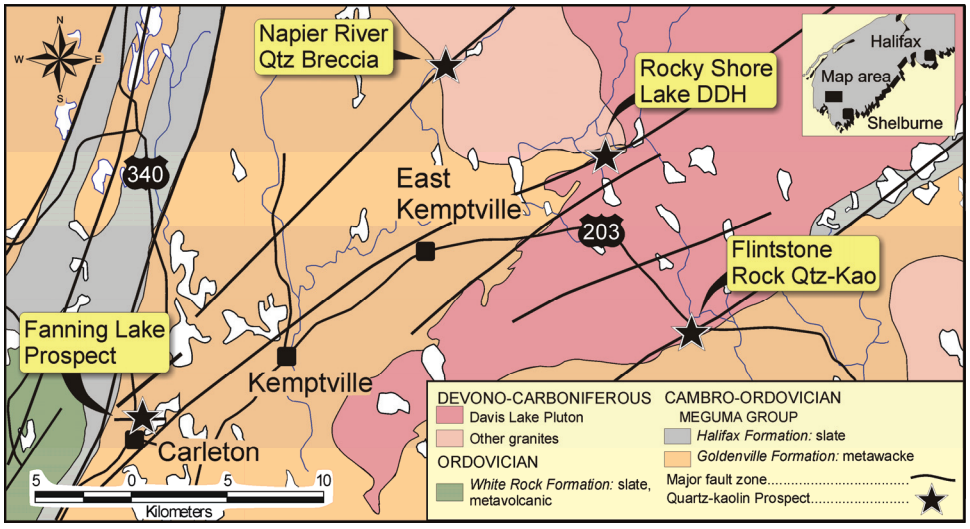

***Figure 1**. Geology of the East Kemptville area showing locations of major fault zones and quartz-kaolin deposits.*