

## **A structural study of the Dogpaw and Dubenski lode gold deposits in the Kenora-Fort Frances area, Western Wabigoon Subprovince, Northwestern Ontario.**

**AD Krapf-Jones<sup>1</sup>, SR Meade<sup>2</sup>, S Lin<sup>1</sup>**

<sup>1</sup>Department of Earth and Environmental Sciences, University of Waterloo, Waterloo, Ontario

<sup>2</sup>Earth Resource and Geoscience Mapping Section, Ontario Geological Survey, Sudbury, Ontario

Several gold deposits in the Neoproterozoic Rowan-Kakagi greenstone belt of the Western Wabigoon Subprovince are hosted in suspected splays of the regional Pipestone-Cameron fault zone. The project focuses on 2 historic shear zone-hosted gold occurrences: the Dogpaw (0.024 M oz) and Dubenski (0.077 M oz) deposits, located approximately 80 kms south of Kenora. While previous work on gold mineralization in the Rowan-Kakagi greenstone belt has suggested that these hosting structures are related to the trans-crustal Pipestone-Cameron fault zone, this relationship has since remained largely speculative. This project is the first comprehensive, cross-property study with the goal of creating a structural framework relating deformation, alteration and mineralization at different gold occurrences in the Rowan-Kakagi greenstone belt. The Dogpaw and Dubenski deposits have been examined by a number of mineral exploration companies over several decades. This has provided numerous mechanically stripped outcrops with good, accessible exposures of key structural relationships and the hosting mineralization. Detailed mapping and systematic sampling were conducted at several trenched exposures at both deposits in 2016. This was complimented by regional-scale field work across properties and along the trend of the Pipestone-Cameron fault zone. Preliminary results from structural mapping at the Dogpaw deposit have revealed potential constraints on the timing of gold deposition in the Rowan-Kakagi greenstone belt. At the Dogpaw deposit, alteration and mineralization are strictly hosted in a set of discrete, brittle-ductile, conjugate shear zones which are crosscut by late- to syn-tectonic quartz-feldspar-porphyry dikes. At the Dubenski deposit, mineralization and alteration are folded by shear zone-related folds whose geometry suggests that they are related to the apparent dextral movement along the Pipestone-Cameron fault zone. Regional mapping along segments of Pipestone-Cameron fault has also revealed that the discrete, gold-bearing shear zones of the Dogpaw and Dubenski deposits share similar structural characteristics to the Pipestone-Cameron fault zone. These preliminary results suggest a temporal and genetic relationship between the Pipestone-Cameron fault zone and gold-hosting shear zones in the Rowan-Kakagi greenstone belt. Future work includes detailed mapping and targeted sampling at the Cameron Lake deposit (0.675 M oz) hosted in the Cameron Lake shear zone, to further develop a deposit-scale structural model that can be compared to the regional fault zone.