

THE APPLICATION OF INDICATOR KRIGING IN THE MODELLING OF GEOLOGICAL DATA

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Abstract

Exhaustive geological databases are frequently compiled during the exploration and resource definition phases of mineral project development. A geological database is then often reviewed, plotted to section (or plan) to aid in the interpretation of a geological model before being forgotten. The geological or “soft data” in many cases provides critical information which warrants substantial further investigation to provide a better understanding of the geological controls on mineralisation, the possible distribution of important material types (eg: refractory ore) and often, appropriate bulk density assignment. Indicator Kriging (IK) can frequently provide a useful, cost effective means of validating and enhancing the more traditional geological interpretation.

This paper reviews the application of IK in the development of both a geological and mineralised model for a mesothermal gold deposit which is interpreted as being both structurally complex and having multiple controls on the distribution of the gold mineralisation. The geological data investigated includes lithology, alteration and veining which have been reviewed both independently and in conjunction with geochemical drilling data.

The results of the IK studies have been compared with the original geological/mineralisation model, and the relative merits of this assessment briefly discussed.

Key Words: *Indicator kriging, probability, semivariogram, soft data.*