

Peer Review Plan

Date: 6/6/2018

Source Center: U.S. Geological Survey (USGS)
Geology, Geophysics, and Geochemistry Science Center
Denver Federal Center
Denver, Colorado 80225

Title: Effect of size-biased sampling on resource predictions from the three-part method for quantitative mineral resource assessment—A case study of the gold deposits in the Timmins-Kirkland Lake area of the Abitibi Greenstone Belt

Subject and Purpose: A quantitative mineral resource assessment is a prediction, for a specified geographic area, of both the number of undiscovered mineral deposits in that area and the amount of mineral resources in those deposits. Such assessments are important, for example, because land management agencies use these predictions, along with other information, to plan for appropriate land use. Quantitative mineral resource assessments, performed with the three-part method, have been conducted by the USGS since 1986.

There is evidence that, in a specific geographic region, the tonnage of mineral resources in discovered deposits tends to decrease with time. That is, in a specific geographic region, mineral exploration companies initially tend to discover relatively large-tonnage deposits. With continued mineral exploration, the tonnage tends to decrease. In terms of statistical terminology, this phenomenon is called “size-bias sampling.”

Size-biased sampling is not taken into account by the three-part method. Consequently, there is concern that size-biased sampling affects its predictions. Despite this concern, there are no investigations of its effects on resource predictions with the three-part method. Thus, these effects are investigated, as documented in this product, with a case study involving gold deposits in the Timmins-Kirkland Lake area of the Abitibi Greenstone Belt. The product will be released as a USGS Scientific Investigations Report.

Impact of Dissemination: This information product is considered by the USGS to be Influential Scientific Information.

Timing of Review (Including Deferrals): April to June 2018. Deferrals are not anticipated.

Manner of Review, Selection of Reviewers, and Nomination Process: Peer reviewers are selected pursuant to Survey Manual chapter 502.3 –Fundamental Science Practices: Peer Review (<http://www.usgs.gov/usgs-manual/500/502-3.html>).

Expected Number of Reviewers: Eight reviewers are anticipated.

Requisite Expertise: Economic geology, probability, and statistics.

Opportunity for Public Comment: No opportunity for public comment is formally incorporated for this product.

Agency Contact: peer_review_agenda@usgs.gov.