

## Diamond Opportunities, Exploration and Mining in Ontario

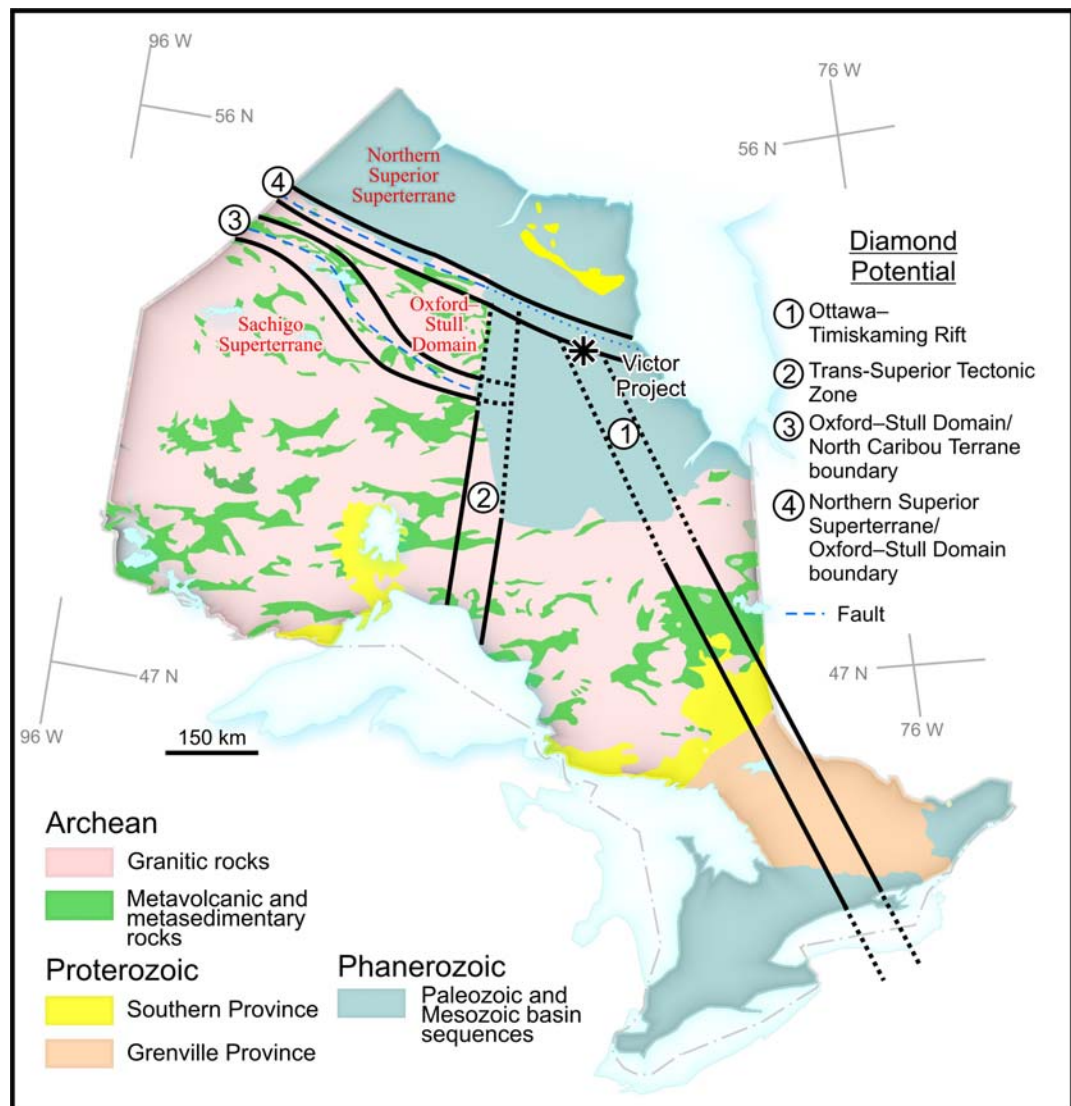
### Introduction

The first recorded discovery of an alluvial diamond in Canada was made somewhere near Peterborough prior to 1920. The 33-carat stone was found during the excavation of a railway cut between Ottawa and Toronto. Although the source of this stone has never been identified, it was presumably found in glacial drift. Alluvial diamonds continue to be unearthed. The most recently reported stone was a 1.39-carat gem-quality diamond panned from a streambed north of Wawa in 2002.

### Distribution

Diamonds have been found in bedrock in three distinct types of rock in Ontario. Kimberlite, the most common host of diamond deposits, is found in areas across the province. Diamonds have also been found in unusual fragmental intrusive and extrusive rocks of Archean age in the Marathon, Wawa, and Cobalt areas.

The global distribution of kimberlites is not random. The factor governing their location is the thickness of the Earth's crust. It must be at least 35 km thick. Crust this thick is found at the cores of continents. Called cratons, such cores are generally comprised of rocks more than 2.5 billion years old that have undergone very little deformation for more than a billion years. The Canadian Shield, such as underlies two-thirds of Ontario, is a craton. Kimberlites are also associated with crustal-scale features such as rifts or the boundaries between geological domains. The kimberlites in Ontario are found in one of three "structural zones". A fourth "structural zone" has recently been identified. All of these prospective zones are shown on the map below.



Kimberlites occur in clusters of several pipes, and the pipes in a cluster are typically at most tens of kilometres apart. Within Ontario, there are four broadly defined clusters of kimberlites. They are associated with three of the four structural zones. Clusters of 19 kimberlite pipes and dikes in the Kirkland Lake area, 19 other kimberlite pipes and dikes in the New Liskeard–Cobalt area, and 24 pipes and dikes south of the Attawapiskat River are all associated with the Ottawa–Timiskaming Rift. Kimberlite dikes in southeastern Ontario are also associated with this structure. A cluster of 6 kimberlites, lying approximately 150 kilometres west of the Attawapiskat cluster, is associated with the Northern Superior Superterrane/Oxford–Stull Domain boundary. Kimberlites are also known along the north side of the Trans-Superior Tectonic Zone. All of these structural features, plus the Oxford–Stull Domain/North Caribou Terrane boundary offer highly prospective geological environments for diamonds.

## **Development**

De Beers Canada Inc. opened Ontario's first diamond mine, located in the James Bay Lowlands 90 kilometres west of Attawapiskat. Construction at the Victor Project began in early 2006 and the first production diamond was recovered during commissioning of the processing plant on December 26, 2007. The Victor Mine was officially opened on July 26, 2008. It was also the same day the Victor Mine achieved full production. In 2008, the mine produced 730,000 carats worth a value of \$306,852,000. The total capital cost for the mine construction was \$1.022 billion. The open pit mine has an expected life of 12 years and a total project life of 17 years. De Beers estimates that total diamond production from the mine will be 6 million carats from approximately 28.5 million tonnes of kimberlite. Diamonds are recovered from two coalescing kimberlite pipes, the Victor Main and the Victor Southwest. De Beers will continue to investigate the economic potential of the 16 other kimberlite pipes in the vicinity of the Victor pipe. Two diamonds from the Victor Mine have been installed in the Legislative Mace belonging to parliament in the Ontario Legislature. One diamond was cut and polished, while the other remained in its natural rough form.

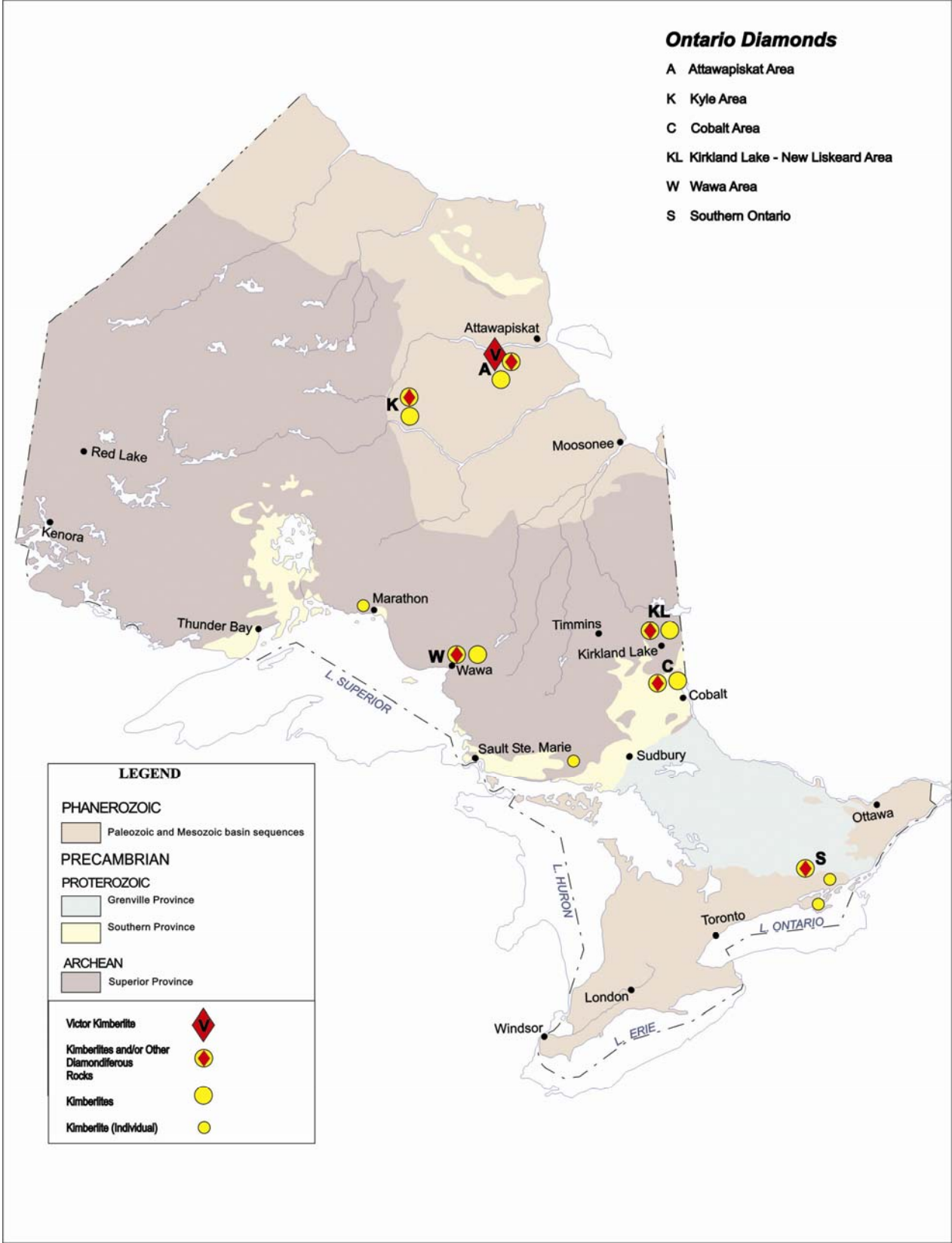
Canada's diamond industry has now become an industry worth more than \$2.4 billion in 2008, with all indicators pointing to potential for future growth. Canadian diamond production in 2007 was about 17.1 million carats and in 2008 was 14.8 million carats. Two mines, Ekati and Diavik, are already in production in the Northwest Territories. In addition to Victor, two other mines opened in 2008: one at Snap Lake, about 220 kilometres northeast of Yellowknife, N.W.T., and the other (Jericho), 350 kilometres southwest of Cambridge Bay in Nunavut. These mines will consolidate Canada's position in world diamond production by value, third after Botswana and Russia.

A new diamond cutting and polishing factory is being set up in Sudbury by Crossworks Manufacturing, part of the Antwerp, Belgium-based HRA-SunDiamond Group, and will create approximately 50 jobs in the community once the facility is fully operational by the end of 2009. Crossworks will purchase Victor diamonds from De Beers' Diamond Trading Company, and sell them to retailers across North America, including the larger Canadian-owned jewellery chains.

The Canadian Diamond Bourse, a wholesale, rough and polished diamond exchange that provides a safe and secure meeting place for buyers and sellers of diamonds, was launched in March, 2009 and is due to open its doors later the year. With the establishment of its bourse, Canada joins the global stage as one of a few select countries that feature all the elements of the diamond industry -- from mining to retailing.

**Ontario Diamonds**

- A Attawapiskat Area
- K Kyle Area
- C Cobalt Area
- KL Kirkland Lake - New Liskeard Area
- W Wawa Area
- S Southern Ontario



**LEGEND**

**PHANEROZOIC**  
 Paleozoic and Mesozoic basin sequences

**PRECAMBRIAN**

**PROTEROZOIC**  
 Grenville Province  
 Southern Province

**ARCHEAN**  
 Superior Province

Victor Kimberlite

Kimberlites and/or Other Diamondiferous Rocks

Kimberlites

Kimberlite (Individual)