

## The Pebble Project: The Future of U.S. Mining and Metals

### MESSAGE FROM THE PRESIDENT



**Ronald W. Thiessen**  
President & CEO

As the price of gold soars to all-time highs and physical demand climbs in the face of a weakening US dollar, gold companies are embracing new approaches and shifting focus from pure gold deposits to poly metallic or gold-containing base metal deposits in the quest to augment diminishing reserves.

The scarcity of world class gold deposits is already taking its toll on the industry's bottom line. Since 2001, the number of gold discoveries has trended downward, and global output has shrunk nearly 5% per year. This trend is particularly pronounced in North America, where annual output has dropped from 17 million oz in 1998 to just 10 million oz in 2008. Gold resources in the US today represent only a small portion of global gold resources – a recent US Geological Survey assessment of US resources indicated 15,000 tons of gold in identified, and 18,000 tons in undiscovered resources.

Major gold companies are continually struggling to replace reserves depleted by annual production, but even more importantly, mined back when gold fetched substantially lower prices. The world's top three producers produce five to eight million oz of gold per annum or looked at another way, deplete their gold reserves; meaning that at least one new multi million oz deposit needs to be discovered and developed annually to replace reserves lost to production. To date, this has not been the case and geologists are running out of ore bodies to discover. This has sparked renewed interest from major gold producers in previously identified, mixed (poly metallic) base metal porphyry deposits that also contain gold resources. Advancing porphyries in safer, politically stable locations, such as Pebble in Alaska, is becoming far preferable to developing the few remaining, dangerously located gold deposits.

It is estimated that nearly one quarter of undiscovered gold in US resources is contained in porphyries – and porphyries represent some of the world's largest undeveloped deposits, comprising two fifths of all development pipeline projects with greater than 7.5 million oz gold. Despite the recent growth in gold porphyry discoveries, only five porphyry miners are producing more than 300,000 oz of gold per year. Yet the largest gold mine in the world, is actually a large copper porphyry mine; Freeport McMoran's Grasberg Mine in Irian Jaya which produces in excess of 2.0 million ounces of gold

annually. That gold is contained in the copper concentrates that they ship to international smelters.

Technological advances and increased efficiencies in bulk mining methods and metallurgical processing, combined with high commodities prices have turned previous sub economic mineral resources into economic ore reserves. This combination has allowed the industry to identify economic multi million and in some cases such as Pebble multi billion ton porphyry deposits. Following the abrupt end of the previous boom in 1997, many of that period's significant mineral discoveries were neither explored nor mined to full potential as porphyries were cost prohibitive to develop. Many, only partially delineated, remained viable projects. But thanks to a change in revenue-cost relationship for gold production, development of lower grade deposits is now more feasible and producers are increasingly turning to porphyry deposits to fill the gold dearth. On a global level, gold contained in older porphyry deposits in South Africa, Australia and Nevada – already representing a large slice of production – are now moving to an even greater role.

To increase exposure to quality projects, many mining companies are turning to new exploration methods and technologies, broadening their investment in greenfields exploration activity – spurred by technological advances such as increasingly sophisticated trace element analyses at lower concentrations and multi-elemental analyses for associated metals. Other advances that are improving prospecting and efficiency, and resulting in better and more focused target selection prior to field examination, include updated remote sensing techniques such as satellite imagery and alteration mapping, 3-d modeling of geophysical surveys, regional geochemical exploration, and regional geophysical data processing. With the GIS systems available today, geologists are better able to integrate various techniques and findings when interpreting results.

Many believe lingering effects of the economic crisis and inflationary fears may continue to drive high physical demand for gold. Look for the aforementioned trends such as porphyry development and greenfield exploration to continue in the New Year, alongside increasingly sophisticated technological advancements as mining companies struggle to identify and bring to production viable gold sources in an effort to arrest the production shortage.