

# Quest's revised PEA shows a potential to address the global heavy rare earth and yttrium supply deficit

☒ China is and will remain the dominant factor when it comes to rare earths but its supremacy is eroding, as it aims to reduce its annual production of rare earths for various reasons to about 90,000 tons per year. In 2010, production was 130,000 tons. Whether China will manage to shut down a vast number of illegal and small mining operators, consolidating the industry in China is another issue. Yet, the demand for rare earths continues to grow. Some analysts predict an annual increase of up to 10%, implying that at least 200,000 tons of various rare earths will be needed by 2020.

This surge in demand has to be collected in one way or another and given its reduction plans, China will not be the one to provide the supply. New sources are needed and Canada, particularly the Province of Quebec, has the potential to become one of the new main suppliers. There is some support at the governmental level as well, as Canada established for this purpose the “Canadian Rare Earth Elements Network” in order to grow in the coming years into a major force in the market for rare earths and gain a 20% market share. One of the more interesting Canadian companies is Quest Rare Minerals (‘Quest’, TSX: QRM | NYSE MKT: QRM). Quest has raised its potential even further after releasing a revised and “substantially improved” Preliminary Economic Assessment (PEA) for its Strange Lake Project. Quest aims to produce zirconium using a cost-effective and highly efficient (that is high or +80% recovery rates) method.

Quest has already extracted a heavy rare earth plus yttrium

(HREE+Y) concentrate with a purity level of approximately 84%, of which 75% is composed of yttrium oxide. Quest said that the chemistry results of the HREE+Y concentrate meet the requirements of its potential customers while it has already signed an agreement to supply zirconia filter cake material to TAM Ceramics for quality evaluation. In an ongoing pursuit to optimize recovery from the Strange Lake flow sheet, Quest has already delivered an LREE concentrate containing lanthanum, cerium and sufficient amounts of praseodymium, neodymium and gadolinium to add significant value. Quest has been working with the Helmholtz Institute for Resource Technology in Germany and SGS in Lakefield, to review and constantly improve its metallurgical processes, delivering a much higher process capacity than what the current mini-pilot plant has delivered.

Quest has invested time and resources on developing its metallurgical processes to maximize potential, focusing on production and the appeal of its products in order to become a leader in the manufacturing and marketing of rare metal oxides and related minerals. Quest's revised PEA confirms that its efforts are heading in the right direction. Quest has been able to shave off over CAD\$ 1.23 billion in capital costs – excluding the separation facility – from last October's PEA, which estimated that cost to be in the order of CAD\$ 2.57 million. When adding the cost of the separation facility the total capital cost is estimated at CAD\$ 1.63 billion based on a 30 year mine lifespan. The new PEA places the mineral flotation at the mine site in order to cut the amount of minerals to be shipped to and processed at the proposed plant in Bécancour, Québec. This is one of the ways in which Quest demonstrates its effort to improve its environmental risk, because, when combined with a more efficient separation process, this will allow for far lower residue volumes at the Bécancour site. Quest says that reduction could be in the order of 65%.

CEO Peter Cashin suggested that Quest could reduce these costs

even further for the Definitive Feasibility Study (to be issued later this year) thanks to technical efficiency improvements being developed by Dr. Dirk Naumann, which should make Quest an even better investment opportunity than it already is. Indeed, Quest represents an opportunity for Canada (and Quebec) to take a lead role in the production and the technology related to rare earths. Quest's PEA points to a stable supply of critical rare earths (including holmium and lutetium), that address a growing global demand.

Other financial highlights from the revised PEA include:

- CAD \$357/year in operating costs at about (= CAD\$ 34.25 per kg. rare earths product.)
- 4,404 tons of HREE + yttrium and 6,019 tons of LREE average annual production.
- 78% of annual revenue earned from HREE and yttrium.
- The project will generate an average \$758 million in revenue per year over the life of mine