

## **Environmental Protection at the New Generation of Uranium Mines in Northern Saskatchewan**

**by**

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### **Summary:**

Canadian uranium production is located in the Athabasca Basin of Northern Saskatchewan and represents about thirty percent of current world production. Uranium production at the currently operating sites started at Rabbit Lake in 1976, with further production starting at Cluff Lake and Key Lake in the early 1980's. Mining of the uranium reserves at these sites is nearing completion and a new generation of mining and milling facilities have been under development for the past decade. Two of these new projects, at McArthur River and McClean Lake, started up in 1999, with planning continuing for the Cigar lake and Midwest projects. Protection of workers and of the environment have been key factors in the success of the existing facilities, and the new facilities represent further evolution in these areas.

In total, the ore reserves at these four new projects represent about one billion pounds of uranium. These are high grade deposits with the ore grades at McArthur River and Cigar Lake, which range up to 30% uranium, being the richest in the world. In addition to the high uranium grades, the ores often contain arsenic, nickel and other heavy metals which are potentially harmful to the environment. This paper will provide an overview of the state-of-the-art methods used to mine and process these high grades ores, and to manage the resulting waste rock, liquid effluents and tailings to provide sound environmental protection in both the short and long term.

The environmental monitoring programs developed to confirm satisfactory performance will also be briefly described.

In addition to these technical issues, the paper will summarize the lengthy environmental assessment and licensing processes, which began in 1991 with the formation of a Joint Federal/Provincial Panel for environmental assessment of the new projects. Comments will be offered on how the timeliness and efficiency of these processes might be improved in the future.