



**STARFIELD** RESOURCES INC.

**NEWS**

## **Starfield Resources Provides Update On Hydrometallurgical Test Work**

*Results of testing may reduce operating costs of hydromet process*

**Toronto, Ontario – April 21, 2010 – Starfield Resources Inc. (“Starfield” or the “Company”) (TSX: SRU)** today provided an update on test work at SGS Canada Inc. (“SGS”) in Lakefield, Ontario to advance development of the Company’s hydrometallurgical process. This innovative technology aims to recover base metals and high grade iron oxide from massive sulphides. The process is expected to have a direct impact on potential future operations at Starfield’s Ferguson Lake project in Nunavut and its Stillwater project in Montana.

The purpose of the testing program is to advance the technical status of the steps in the circuit under development. This stage provides for the oxidation and hydrolysis of ferric chloride at atmospheric pressure by demonstrating continuous operation of these steps at laboratory scale and generating preliminary data on the extent and rates of conversion.

To date, testing has surpassed the oxidation goals assumed from prior modeling and costing calculations on the circuit. Previous work assumed that 75% of the ferrous iron would be oxidized in a single pass through the oxidation reactor, while SGS test work has achieved a best result of 86%. The impact of higher percentage oxidation of ferrous iron is reduced reagent consumption downstream, which reduces operating costs.

The next phase of testing will be an extended oxidation trial run of approximately 80 hours to demonstrate steady operation and to further refine the oxidation step of the circuit.

“We are extremely pleased with the progress of the test work,” said Michael Moran, Director of Engineering at Starfield. “Results have exceeded expectations, and we look forward to the next phase of testing.”

In early May 2010, Starfield will ship approximately 700 kilograms of massive sulphides from Ferguson Lake to SGS. Upon completion of the initial oxidation and hydrolysis work, the massive sulphides will be used in the front end of the circuit of an integrated mini-pilot plant. The front end is comprised of primary leaching (hydrogen sulphide gas removed) and secondary leaching (PGM residue removed), oxidation, hydrolysis, and, if necessary, iron “polishing” (removal of any residual iron from the solution of base metal chlorides produced).

The solution generated in the front end mini-pilot plant will be used to further develop the back end of the circuit, in which base metals are separated and recovered in saleable form. The hydrogen sulphide gas and PGM residue produced and removed during the primary and secondary leaching phase will be captured for further testing. The hydrogen sulphide gas will

be reacted and the heat from that reaction will be measured to further the power generation portion of the process. The PGM residue will undergo testing with the objective of producing a saleable concentrate.

Once testing is complete, Starfield will have generated the process information needed to fully define the Ferguson Lake circuit. After that, the key steps will be scaled up and the process will be demonstrated at an appropriate pilot scale.

#### **About Starfield**

Starfield Resources Inc. is an exploration and development stage company exploring for copper, nickel, and platinum group elements (PGE) in North America. The Company has three main projects: a PGE project in Montana's Stillwater District; a copper project in California's historic Moonlight Copper Mining District; and a copper/nickel/cobalt/PGE project in Ferguson Lake, Nunavut. Additional assets include a diamond joint venture in Nunavut, additional copper/nickel/chrome projects in Montana, and a portfolio of eight gold properties in Nevada that are currently under joint venture agreement. Starfield is also funding the development of a novel, environmentally friendly and energy efficient hydrometallurgical process to recover metals from massive sulphides.

#### **About SGS**

The SGS Group is the global leader and innovator in inspection, verification, testing and certification services. Founded in 1878, SGS is recognized as the global benchmark in quality and integrity. With more than 59,000 employees, SGS operates a network of over 1,000 offices and laboratories around the world.

#### **Forward-Looking Statements**

This news release may contain certain information that constitutes forward-looking statements. Forward-looking statements are frequently characterized by words such as "plan," "expect," "project," "intend," "believe," "anticipate" and other similar words, or statements that certain events or conditions "may" or "will" occur. Forward-looking statements are based on the opinions and estimates of management at the date the statements are made, and are subject to a variety of risks and uncertainties and other factors that could cause actual events or results to differ materially from those projected in the forward-looking statements. These factors include the inherent risks involved in the exploration and development of mineral properties, the uncertainties involved in interpreting drilling results and other geological data, fluctuating metal prices and other factors described above and in the Company's most recent annual information form under the heading "Risk Factors" which has been filed electronically by means of the Canadian Securities Administrators' website located at [www.sedar.com](http://www.sedar.com). The Company disclaims any obligation to update or revise any forward-looking statements if circumstances or management's estimates or opinions should change. The reader is cautioned not to place undue reliance on forward-looking statements.

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