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OVERVIEW OF THE POTASH MINING AND REFINING PROCESS AT MOSAIC BELLE PLAINE

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Abstract

This paper will present an overview of the potash mining and refining processes at Mosaic's solution mine near Belle Plaine, Saskatchewan, Canada.

Potash deposits in this area of Saskatchewan are located deeper than 5,000 feet below surface which makes solution mining the most economic and safest method of mining these reserves. Wells are directionally drilled, cased and cemented from surface to the base of the potash beds. These wells are used to transport fluid to the Prairie Formation to dissolve the evaporite minerals of halite (sodium chloride) and sylvite (potassium chloride). This brine is then pumped to the refinery facilities for processing.

Two different processes are used to separate the potassium chloride and sodium chloride. The first uses evaporators and crystallizers to heat the brine and evaporate water to separate off the sodium chloride and then precipitate the potassium chloride from the brine. The re-crystallized potash is then dewatered, dried and sized to produce saleable Fine, Standard and Coarse products. Fine and Standard product is also compacted, crushed and sized to produce Pegasus granular product. High purity industrial grade product is produced through the second process which uses cooling ponds to cool the brine causing the potassium chloride to precipitate and be processed.

The Belle Plaine operation produces more than 20 different agricultural and industrial products, many utilizing proprietary production techniques.

Key words: Solution Mining, Potash, Canada, Saskatchewan

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