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Lithium Potential of Brines in Southwestern Manitoba

ABSTRACT

Production of lithium from deep brines in continental sedimentary basins may be a cost-effective source of lithium. Southern Manitoba has a complex groundwater aquifer system, with salinities ranging from brines in the deeper aquifers to freshwater in the shallower and eastern aquifers. Manitoba's oil and gas operations produce large quantities of these brines, which contain a wide range of trace elements. Although very limited preliminary results indicate the Li concentrations in Manitoba's brines are low, extrapolation of better, more comprehensive results from Saskatchewan suggests that there is potential for Li concentrations to be higher than currently recorded in Manitoba.

BIOGRAPHY

Michelle P.B. Nicolas attained her B.Sc. Honours and M.Sc. in geology from the University of Manitoba. She joined the Manitoba Government in 1998 as a Petroleum Geologist with Manitoba Growth, Enterprise and Trade. She joined to the Manitoba Geological Survey in 2007 as a Petroleum Geologist and Phanerozoic Stratigrapher, and then became the Chief Geologist of Sedimentary Geoscience in 2013. She is currently the acting Director of the Geological Services Branch.

Her specialty is in the petroleum geology and stratigraphy of Manitoba's two Phanerozoic sedimentary basins. She has guest lectured at Brandon University and the University of Manitoba, and has co-supervised several undergrad theses. She has done work on most of the Phanerozoic formations in the Williston Basin, including the prolific Bakken Formation, the potash-bearing Prairie Evaporite, and deep subsurface brines. She also works on the stratigraphy and hydrocarbon potential of the frontier Hudson Bay Basin. She is a registered Professional Geoscientist with Engineers Geoscientists Manitoba, and is a Fellow of Geoscientists Canada.

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