

## **Geology and Bitumen Resource Assessment of the Grand Rapids, Cold Lake, Alberta Canada**

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The mission of the Energy Resources Conservation Board (ERCB) is to ensure that the discovery, development and delivery of Alberta's resources takes place in a fair, equitable manner and in the public's best interest. One mandate of the ERCB is: "to provide for the appraisal of Alberta's oil sands resources". Oil sands is the general term used to refer to crude bitumen and the rocks and sediments that contain it. Oil sands deposits occur within several stratigraphic intervals over wide areas, with each deposit consisting of one or more zones.

Three geographic areas, together with the oil sands deposits they contain, have been designated as Oil Sands Areas (OSAs) by the ERCB. These OSAs occupy an area of approximately 140 000 square kilometres (54 000 square miles) and are denoted as Athabasca, Cold Lake and Peace River. The Cold Lake OSA has been the focus of a recent regional geological study to update the bitumen resource of the Upper and Lower Grand Rapids Bitumen Deposits. The Grand Rapids Formation consists of Lower Cretaceous (Albian) sands and shales that were deposited as a series of regional coarsening upward sequences (middle shoreface to near shore marine) with incised channels containing estuarine sediments. It is conformably overlain by the Colorado Group and conformably overlies the Clearwater Formation within the study area. In this study the Grand Rapids has been differentiated into the following stratigraphic units: Rex Sand, General Petroleum (GP) Member, Sparky Sand, Waseca Member, McLaren Member and Colony Sand.

The last resource estimate, published in 1996, for the Upper and Lower Grand Rapids oil sands deposits combined is 17 304 106 m<sup>3</sup> and was based on a 3% mass bitumen cut-off. For the recent study, crude bitumen pay was determined for each stratigraphic zone and the bitumen deposit volume was determined on a cumulative basis at a 6% mass bitumen cut-off.

The poster presents the results of the study and includes new regional cross sections, isopach/structure maps and new volumetrics.