

Key Facets of Regional Groundwater Resources and their Relation to Possible Cumulative Effects, Ft Mc Murray, Alberta

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The Athabasca oilsands region of Alberta is located in the north-eastern portion of the province within the Regional Municipality of Wood Buffalo and the Northeast Regional Planning area. The oilsands deposit comprises an area of roughly 67,260 km². The hydrocarbon deposits within the area represent one of the world's largest known hydrocarbon resources. According to the Alberta Energy Resources Conservation Board (ERCB), it is estimated that the area contains about 315 billion barrels of recoverable oil using current technology. In the last decade, development in the Athabasca Oil Sands (AOS) region has reached an unprecedented scale. In response, oil sands developers, regulators, and the general public have expressed concern for local water resources quantity and quality (both groundwater and surface water). This concern relates to the topical questions surrounding possibilities for potential cumulative effects on water quantity and quality from existing and future developments on regional groundwater resources and, in particular, surface water features where they are sustained by the groundwater flow. Oil sands development EIAs provide multiple sources of high quality hydrogeologic information, especially in terms of groundwater hydraulics and detailed hydrochemistry. These high quality data sources are reviewed with the objective of informing the reader of key hydraulic features and groundwater quality characteristics that are relatively unique to the Athabasca oil sands region. A convenient synthesis of recently published EIAs, with a focus on how these hydraulic features and groundwater quality characteristics play into possible cumulative effects, is provided.

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Costa is a University of Calgary Graduate with an undergrad in the field of Geology. Costa's experience and career development has been in the fields of hydrogeology and geophysics.

Costa has over eight years of project management and consulting experience. He has approximately six years of experience in the field of geophysics, providing support in geophysical assessments and exploration projects which include: resource exploration programs, environmental assessments and geotechnical investigations.

Since 2007 Costa has been providing project management and technical support for hydrogeological projects that include: contaminated sites work, baseline EIA's, and dewatering projects for mining applications. His expertise extends to water well design, drilling supervision, aquifer testing and hydrogeological site assessments.