

Choke point for oil sands may be water shortage

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ENVIRONMENT REPORTER

May 11, 2007

The amount of water available in Northern Alberta isn't sufficient to accommodate both the needs of burgeoning oil sands development and preserve the Athabasca River, contends a study issued jointly yesterday by the University of Toronto and the University of Alberta.

The study, written in part by Dr. David Schindler, a University of Alberta biologist considered Canada's top water expert, suggests that the choke point for the province's oil sands expansion may not be the huge carbon dioxide emissions arising from mining and processing the sticky, bitumen containing tar sands, as is widely assumed, but a lack of water.

Oil sands plants typically use two to four barrels of water to extract a barrel of oil from the tar sands, a resource that has given the Northern Alberta region the world's largest petroleum reserves but made it a global centre of environmental controversy.

The problem of water availability is expected to become acute in the decades ahead because climate change is likely to cause much more arid conditions, reducing stream flows on the Athabasca River, the source of the industry's water, to critically low levels during parts of each year.

"Projected bitumen extraction in the oil sands will require too much water to sustain the river and Athabasca Delta, especially with the effects of predicted climate warming," the study said. It said the amount of water earmarked for the oil sands has already reached about 20 per cent of the river's water during winter periods, when flows are at seasonal lows, a percentage that could rise even further. "If climate continues to warm, runoff continues to decline and winter flows continue to decrease ... the water needs of the oil sands could reach a critical proportion of winter low flow," it said.

The study, called "Running out of Steam? Oil Sands Development and Water use in the Athabasca River-Watershed," said stream flows have dropped 30 per cent over the past three decades, most likely due to climate warming.

Temperatures, up about two to three degrees in the area since the early 1970s, are causing far more water to evaporate from the soil and not make it into groundwater to replenish the river. The study projected further water flow declines of up to 71 per cent in dry, warm years by 2050, which would devastate wildlife dependent on the river.

In an interview, Dr. Schindler said the reduction in Athabasca flows since about 1970 has had the same impact on drawing down river water levels as adding 15 typical oil sands plants. Seven major oil sands plants are either operating or planned, and Dr. Schindler said the river's water "is fully allocated, possibly over allocated, right now."

In response to water worries, companies such as Syncrude Canada Ltd. have been trying to reduce the amounts used through such actions as increased water recycling. Syncrude bills

itself as the most efficient water user in the oil sands, using only 2.28 tonnes of water in 2005 for every tonne of oil extracted.

Alberta Environment spokeswoman Lisa Grotkowski said the province has devised rules to deal with water shortages due to oil sands extraction and believes it has set a safe level of water extraction. Earlier this year, it announced that companies would have to curb withdrawals if flows fall below critical thresholds. She said that only 3.6 per cent of average flows in the Athabasca River have been earmarked for industry and other users, such as municipalities. "The allocations really are one of the lowest in the province," Ms. Grotkowski said.

However, Dr. Schindler said that as temperatures rise, the effects on stream flows will be dramatic during low water periods.