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Water or Oil? Troubling Trends ~ *Wendy R. Holm*

Troubled Waters, Troubling Trends, released in early May by the Alberta-based Pembina Institute, should be a wake up call for all Canadians, and first out of bed on this issue should be Canada's farmers.

The oil industry's thirst for Canada's water is old news. Most Canadians know, certainly those in western Canada, that oil extraction through oil-sands mining, in-situ steam injection and water flooding all place huge demands on surface and groundwater resources.

What is news is Pembina Institute's careful documentation of the extent of current water withdrawals, and the implications for rising energy prices on future water demand.

Add to this the North American Free Trade Agreement water rights held by US-based oil and gas companies operating in Canada, and you have a recipe for disaster for Canada's farmers.

Seven percent of water allocations in Alberta is controlled by the oil and gas sector. When surface water is taken out of the equation and only groundwater considered, this figure jumps to 37%. Unlike water used for agricultural or municipal purposes, most of this water never returns to the watershed.

The Pembina report notes some improvements. In 2004, water use by conventional oil extraction methods averaged 40% of 1977 levels. Still, 75% of this was surface water and fresh (non-saline) groundwater, 22 million cubic metres of which were pumped deep beneath the earth to recover residual deposits of crude oil, removing it from available supply for an estimated 50,000 to 500,000 years.

For farmers in water scarce areas of the province, this is of major concern.

But water use in oil sands extraction is of even greater concern. Alberta's reserves of bitumen are among the largest in the world, second only to Saudi Arabia. Escalating energy prices mean production of these reserves is expected to double in 5 to 7 years and triple by the year 2020.

Without a fundamental change in extraction processes, this will place unprecedented demands on Western Canada's water.

Within the Athabasca River Basin, largest of the provinces three oil-sands deposits, companies hold rights to divert over 500 million cubic metres of water from rivers, surface runoff and groundwater. Last year, 359 million cubic metres were drawn from the basin, more than twice the city of Calgary's annual water use.

There are two oil sands extraction processes: mining and in-situ drilling operations.

For oil-sands mining, 2 to 4.5 barrels of water are required to produce one barrel of oil. Only a fraction of this (10%) returns to the river system. While a small portion is recycled in the extraction process, the majority becomes contaminated and is stored in vast tailing ponds.

An average of six cubic metres of tailings are created for every one cubic metre of bitumen mined. At minimum, it will take decades for the fine clay particles to settle out, a prerequisite to reclamation.

In the Athabasca Basin, fully two-thirds of all surface water licenses are allocated to oil sands mining. Contrast this with industrial uses (17%), commercial uses (6%), dewatering (6%), water management (6%), and municipal uses (1%).

Irrigation, agriculture and habitat enhancement together account for zero percent of licensed surface water allocations from the Athabasca River and its tributaries.

After 30-plus years of oil sands mining, basin land that was once boreal forest and wetlands is now covered by 50 square kilometres of toxic tailing ponds. And not one hectare of this land has ever been certified as reclaimed by the Alberta government.

According to the Pembina Institute, when the planned oil-sands mining projects go ahead, demand for water will increase by 36%. As a result, the entire Muskeg River watershed will likely be affected beyond recovery.

While alternative technologies are being considered, the thirst for water for oil-sands mining in Alberta is expected to continue unabated until at least 2030.

Ninety-three percent of Alberta's oil-sand deposits are considered too deep to extract. In these cases, in-situ extraction methods are employed: steam is injected to warm the bitumen so it can flow and be pumped to the surface.

In 2004, approximately one-third of bitumen recovery in Alberta was through in-situ processes. As higher energy prices stimulate production, water demand will increase. Although in-situ operations use less water than oil-sands mining operations, roughly one-third of water used is fresh groundwater. Since Alberta has no accurate measure of its groundwater resource, the use of groundwater for in-situ extraction raises huge public

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policy risks.

Withdrawals of fresh and saline water for in-situ extraction operations have increased five fold since 1999. In 2004, fresh water use was three times higher than Alberta government projections and saline water use was twice predicted levels.

While the Pembina report focuses on the Athabasca River basin, the same concerns of course apply to oil sands extraction from the Cold Lake and Peace River deposits.

In its recommendations, the Pembina Institute calls for a moratorium on oil sands mining until a) the impacts are understood and managed, b) a wetlands policy has been implemented and c) standards for tailings management have been established.

The report also calls for strict implementation of Alberta Environment's recently announced Water Conservation and Allocation Policy for Oilfield Injection, the establishment of water use targets, and the imposition of fees on the use of fresh water by oil companies to support groundwater research and water management techniques.

As the Pembina Institute correctly notes, Alberta will have to soon decide which is more important: water or oil. On a public policy level, the trade-off is agriculture and the environment versus the demands of a foreign-dominated energy sector.

NAFTA water rights held by US companies operating in Canada exacerbate the situation to the point of crisis. The Pembina report is a priority read for all farmers, and for all politicians who purport to represent them. Download it from www.pembina.org.

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