

## **Backgrounder: Oil Sands Steam Plant Industry & the Clearwater River**

Opti-Nexen is one of the largest steam plant operators in the oil sands (also known as SAGD: Steam Assisted Gravity Drainage).

Opti-Nexen wants to withdraw 17,000 cubic meters of water a day the Clearwater River. One cubic meter of water is equal to 1,000 liters. The average Canadian uses 343 liters a day. Therefore Opti-Nexen wants to remove enough water from a protected Canadian Heritage River to sustain nearly 50,000 Canadian households every day.

The Clearwater River is a pristine river. It originates in Saskatchewan and runs into Alberta where it empties into the Athabasca River at Fort McMurray. It was designated a Heritage River first by Saskatchewan in 1987 and by Alberta in 2004.<sup>1</sup>

Historically, the Clearwater River was at the centre of the 18<sup>th</sup> century fur trade and was part of the voyageur route to the Arctic.<sup>2</sup> The explorers Peter Pond, Alexander Mackenzie and Sir John Franklin canoed this legendary river. It is one of the few western rivers that remain as the voyageurs, and Cree and Beaver nations once paddled it.<sup>3</sup>

Opti-Nexen's request is without precedent. According to the National Roundtable On the Environment most steam plants now draw their water from salty or freshwater aquifers. But no water for steam plants is now removed from the Athabasca or Clearwater rivers.<sup>4</sup>

Opti-Nexen's troubled Long Lake project, like the majority of industry's steam plants, has failed to meet its water targets and has now doubled its water demand. It has also failed to achieve bitumen production goals. The company initially predicted that it would need two barrels of steam to produce just one barrel of bitumen. Now it requires six barrels.<sup>5</sup>

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<sup>1</sup> [http://www.chrs.ca/Rivers\\_e.htm](http://www.chrs.ca/Rivers_e.htm)

<sup>2</sup> [http://www.chrs.ca/Rivers/Clearwater/Clearwater-F\\_e.htm#3](http://www.chrs.ca/Rivers/Clearwater/Clearwater-F_e.htm#3)

<sup>3</sup> [http://en.wikipedia.org/wiki/Clearwater\\_River\\_\(Saskatchewan\)](http://en.wikipedia.org/wiki/Clearwater_River_(Saskatchewan))

<sup>4</sup> <http://www.trnee-nrtee.com/eng/issues/programs/water/water-workshop/20091103-oil-and-gas-discussions-eng.php>

<sup>5</sup>

[http://cnrp.marketwire.com/client/opti\\_canada/release.jsp?year=2010&actionFor=1114141&releaseSeq=1](http://cnrp.marketwire.com/client/opti_canada/release.jsp?year=2010&actionFor=1114141&releaseSeq=1)

According to its 2008 Sustainability Report, fresh water withdrawals increased from 735,000 cubic meters in 2007 to 1,890,000 cubic meters in 2008 due to increases in bitumen production.<sup>6</sup> Statoil has also expressed concerns about “water management challenges” and shortages for its SAGD operation.<sup>7</sup>

A 2009 report, commissioned by JOGMEC (Japan Oil Gas and Metals National Corporation) on the problems encountered by steam plants, notes that all projects, with the exception of two companies, have exceeded original water estimates or steam to oil ratios by often-extreme volumes. Some companies have used as much as 14 barrels of steam to produce one barrel of bitumen.<sup>8</sup>

In an exhaustive 2009 report on groundwater, the Council of Canadian Academies concluded that steam plants (also known as in situ) could ultimately use more water than mining operations:

Since more than four-fifths of the total bitumen reserves in Alberta are accessible only by in situ methods, the demand for groundwater for in situ production could be as great as or greater than the demand for surface water for oil-sands mining, unless new extraction processes are adopted. (p. 210)

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<sup>6</sup> [http://www.nexeninc.com/files/Sustainability/2008/2008NexenSR\\_summary.pdf](http://www.nexeninc.com/files/Sustainability/2008/2008NexenSR_summary.pdf)

<sup>7</sup> John Kus, Extra Heavy Oil in Canada, TEKNA Conference, Stavanger, Norway, January 23, 2008

<sup>8</sup> <http://trc.jogmec.go.jp/pdf/20091002/1.pdf>