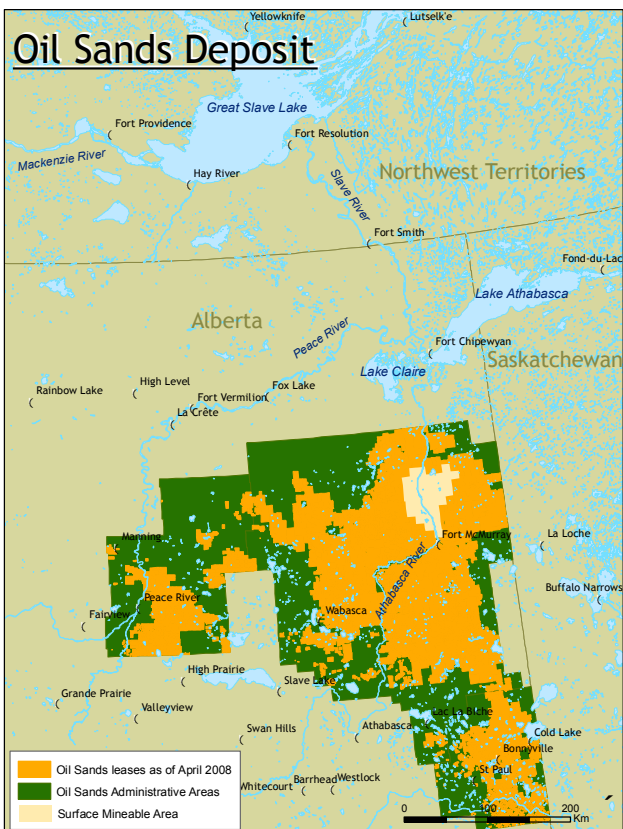


# THE WATERS THAT BIND US

# FACT SHEET

## Transboundary Implications of Oil Sands Development

### “Water is Boss”: Communities Downstream of Alberta’s Oil Sands Concerned About Long-Term Impacts



Source: M. Palmer, The Nature Conservancy

Oil sands development uses large quantities of water and produces large amounts of toxic waste. This can impact the ecosystem and, by association, people’s health, traditional subsistence activities and ways of life. There is growing concern about the long-term impact of oil sands development on the Mackenzie River Basin, which links the oil sands region with communities downstream in Alberta and the Northwest Territories.

Water sustains us and provides us with life. The health of plants, animals and communities is determined by the availability and quality of water resources. As a Mikisew Cree Elder from Fort Chipewyan, Alberta, once said, “water is boss.” Although other land uses also affect water in the Mackenzie River Basin, the oil sands industry poses perhaps the greatest risk due to the pace and scale of development and its heavy use of water and production of contaminants.

Downstream residents in Alberta and the Northwest Territories are becoming increasingly politically active in an effort to protect the region’s water. Residents have organized community meetings and conferences on water issues, and launched a number of legal challenges and interventions against the provincial and federal governments for a lack of consultation and for infringing on treaty rights. For many people, the impacts of oil sands development have reached or passed acceptable environmental and social limits, leading to a lack of trust in current water management processes.

# Impacts of Oil Sands Development on Water Resources

There are two types of extraction processes used in the oil sands: strip mining and in situ (underground) development. Mining occurs when the oil sands are relatively close to the surface, within 100 metres. When deposits are deeper than 100 metres, the oil is extracted by in situ, which involves injecting steam into wells.

Both processes use significant amounts of water. In addition, toxins such as naphthenic acids can leach from tailings ponds, affecting water quality. The release of nitrogen oxide and sulphur dioxide gases also affects water quality by raising the acidity of surrounding lands and waters.

## Strip Mining's Effects on Water

- Vast areas of forest and wetlands, which provide critical ecosystem services such as water and air filtration and flood and erosion reduction, are drained and removed. There is currently no way to reclaim peatlands; these important ecosystems may be lost forever.
- Between 2 and 4.5 barrels of water are used to produce one barrel of oil. The amount of freshwater that oil sands operators have been licensed to take from the Athabasca Basin each year exceeds the annual needs of a city of three million people.
- Fresh water is converted into toxic tailings that cannot be returned to nature. These toxins are stored in tailings ponds and are known to leach into the surrounding ecosystem. The long-term plan to store the tailings in the bottom of large lakes is untested and risky.

Photo: David Dodge, The Pembina Institute



Vast areas of forests and wetlands are drained and removed to mine the oil sands. Above, a Syncrude oil sands mining operation in Alberta.

The oil sands are also a significant source of greenhouse gas emissions, the primary cause of climate change. Climate change affects river flows, lake levels, pollutant concentrations, and freeze-up and break-up dates. Climate change is already having a profound effect on water resources in Alberta and the Northwest Territories.

## In Situ Development's Effects on Water

- Water is taken from underground aquifers to produce steam, which is used to take the bitumen out of the oil sands. This water is injected deep in the earth's crust and little of it is returned to the natural water cycle.
- Wastewater is disposed of in deep wells and landfills, posing a risk to the environment as salts may leach into the surrounding aquifers.
- Roads, seismic lines, pipelines, water-crossings and oil pads are built. This can fragment wildlife habitat, cause soil erosion, and compromise water quality and quantity and ecosystem function.

Several tailings ponds are located next to or near the Athabasca River. For example, Suncor's Tar Island Dyke (below, centre of the photo) is all that separates the Athabasca River from a large tailings pond.



Photo: David Dodge, The Pembina Institute

# Current Water Management is Inadequate

Legal responsibility for the management of Canadian water resources is divided between the federal government and the provinces and territories.

The Government of Canada has jurisdiction over fish and fish habitat, inter-provincial/territorial waterways, migratory birds and endangered species.

The Government of Alberta has control over the province's natural resources, including water. Alberta allocates water via licenses. These licenses are currently being issued without a clear definition of the requirements needed to maintain the ecological health of affected waterways.

Alberta and the federal government work together on oil sands issues through reviews of oil sands projects, policy creation, and multi-stakeholder bodies such as the Cumulative Environmental Management Association (CEMA) and the Regional Aquatics Monitoring Program (RAMP).

So far, however, efforts to manage the effects of oil sands development on water have been inadequate. The following gaps in environmental management remain:

- no land use plan
- no lower limit established for flows in the Athabasca River
- no environmental management plan to maintain watersheds
- no reclamation guidelines for restoring important peatlands
- no specific certification standards for oil sands reclamation

In the Northwest Territories, the federal government governs water and is responsible for conducting research and developing guidelines for water management and monitoring.

Co-managed boards, created through settled land claims and established under the federal Mackenzie Valley Resource Management Act, regulate the use of land and water.



Photo: David Dodge, The Pembina Institute

The Legislative Assembly of the Northwest Territories unanimously passed a motion in March 2007 recognizing water as a fundamental human right. The Government of the Northwest Territories has taken the initiative to produce a Northwest Territories Water Strategy that it plans to release in 2009. The strategy is intended to guide negotiations with Alberta on a transboundary water agreement.

## Towards an Alberta–Northwest Territories Transboundary Water Agreement

In 1997 the provinces and territories of the Mackenzie River Basin (Saskatchewan, Alberta, British Columbia, Yukon and the Northwest Territories) and the federal government signed the Transboundary Waters Master Agreement.

The agreement created the Mackenzie River Basin Board to promote communication and guide consultations on transboundary water agreements. The bilateral transboundary agreement between Alberta and the Northwest Territories has not yet been completed.

## Big Scale, Big Impacts

- Oil sands development uses huge amounts of water. Current oil sands projects are licensed to divert more than 550 million cubic metres of freshwater from the Athabasca Basin each year. The oil sands industry is expanding at such a rapid pace that its use of water from the Athabasca Basin is expected to double by 2010.
- Water used in oil sands development becomes contaminated and cannot be returned to nature. Instead, it is stored in toxic lakes called tailings ponds. About 1.8 million cubic metres of toxic tailings are produced per day.
- Tailings ponds cover over 130 square kilometres and are among the largest man-made structures on earth. Pollutants sometimes leak from tailings ponds into the surrounding groundwater, soil and surface water.
- Some tailings ponds are built directly beside the Athabasca River, posing a threat to the river and ecosystems downstream. Should one of the tailings pond walls breach, an ecological disaster would occur.
- Changes in water management practices are needed to minimize the risks to water resources from oil sands development. Current efforts are not enough to ensure that water remains clean and plentiful north of the oil sands region.
- Northern residents are starting to join with their southern neighbours in calling for a moratorium on new leases and oil sands project approvals.
- Changes in the oil sands industry could help protect water resources. For example, prohibiting liquid tailings would eliminate toxic tailings ponds.
- New oil sands lease sales and oil sands approvals should be suspended until stronger environmental rules protecting water are put in place.

The roads, seismic lines, pipelines, water-crossings and oil pads that are built for in situ oil sands development can fragment wildlife habitat and weaken ecosystems. Left, an aerial view of in situ oil sands development in northern Alberta.



# Summary of Recommendations

Governments, industry, Albertans, Northerners and Aboriginal groups can contribute to the protection of water resources in the Mackenzie River Basin.

The following are recommendations to the governments of Canada, Alberta and the Northwest Territories for improving water management and minimizing risks to water resources from oil sands development:

1. Suspend new oil sands lease sales and oil sands approvals until environmental rules protecting water are in place.
2. Stop granting new water licenses to oil sands projects until a transboundary agreement is complete.
3. Complete a transboundary agreement between Alberta and the Northwest Territories that is enforceable by law. The agreement should include criteria for water quality and quantity and protection of aquatic ecosystems and a commitment by Alberta to notify downstream users about oil sands projects and associated risks.
4. Implement a water management framework for the Athabasca River and Slave River that sets a protective Ecological Base Flow (EBF) below which water withdrawals are prohibited.
5. Prohibit the production of liquid tailings for new oil sands projects. Industry should be required to use and further develop technologies that do not produce wet tailings.
6. Establish a consistent, transparent and integrated monitoring system, at arms length from industry, to assure acceptable water quality and quantity and protect aquatic ecosystems in the Athabasca River, the Peace–Athabasca Delta, Lake Athabasca and the Slave River.

Aboriginal organizations and other northern organizations can help protect water resources by intervening in oil sands projects' reviews, pursuing legal cases against the federal government, and/or by starting a public education campaign territorially, provincially or even nationally.

The Mackenzie Basin covers 20% of the land mass of Canada. Unless stronger rules protecting water are put in place, oil sands development could have long-term impacts on water quality and quantity in the basin.

We envision transboundary environmental rules that protect water, ensure integrated monitoring, prioritize the human and ecosystem needs for water, and establish a legal mechanism for resolving conflicts.

## Want More Information?

For more information and a complete list of recommendations, download the full report, ***The Waters That Bind Us: Transboundary Implications of Oil Sands Development*** from <http://arctic.pembina.org>.