Oil Sands

A strategic resource for Canada, North America and the global market

Tailings Management

Tailings ponds are common to mining operations

About 20 percent of Canada's oil sands resources can be accessed using mining techniques. Like other mining operations worldwide, oil sands mining operations generate leftover material (tailings) after the bitumen is extracted.

Oil sands tailings contain a mixture of solvent and naturally occurring clay, sand, fine silts, water, residual bitumen, salts, metals and organic compounds.

The sand component of the waste tailings settles out quickly, leaving the clay and silt component to form fluid fine tailings, which are stored in ponds at oil sands mining operations and left to settle. Once settled, the reclamation process can proceed.

Suncor Pond 1, Aerial View, 2002

Production water is recycled

To protect the quality of the river's ecosystem and maximize water re-use, production water is transferred to tailings ponds and then recycled into the production process.

All tailings ponds are constructed with containment dykes and groundwater monitoring facilities in order to capture and recycle run off and minimize seepage.

In 2011, a new Lower Athabasca Water Quality Monitoring Program was announced to increase the frequency of water quality measurements. This will provide better data to track any changes in water quality and assess the cumulative effects of oil sands activities.

Suncor Pond 1, Aerial View, August 2011

Steps are taken to prevent birds from landing in the tailings ponds

Residual oil on the surface of the tailings ponds can create a potential hazard for waterfowl. While residual oil is regularly skimmed off ponds, producers are required to take steps to prevent waterfowl from landing in the tailings ponds. For example, movement-detecting noise makers and other tools are used to disperse birds. Companies that fail to protect waterfowl are subject to strict fines.

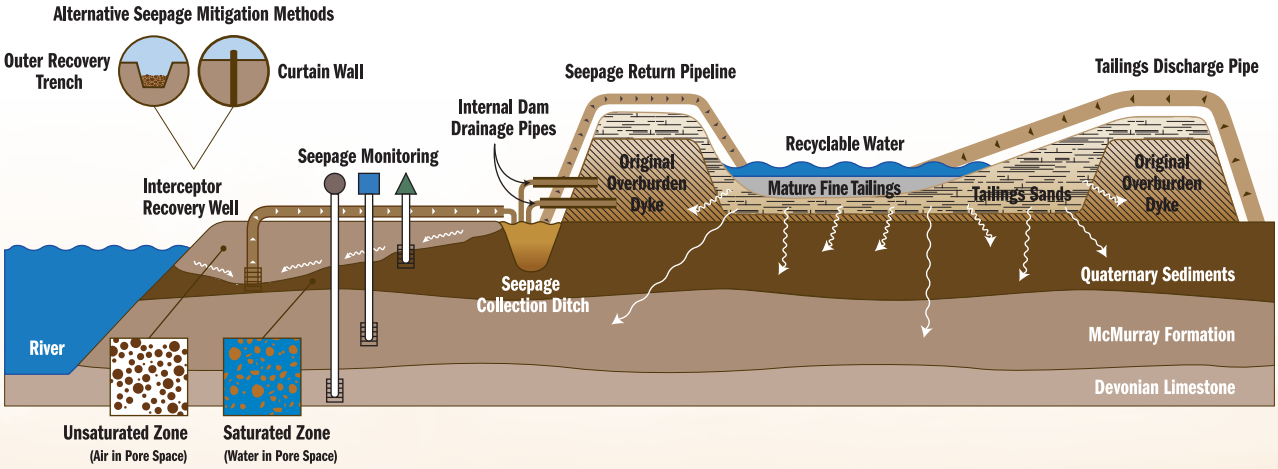
The future of tailings: smaller ponds and faster reclamation times

In oil sands mining, there is a need to set aside an area to remove water from tailings. However, there are regulations that require the volume of fluid fine tailings be reduced and the ponds be ready for reclamation no longer than five years after they cease to be in service. This is an area where regulators, scientists and industry are working together to find solutions.

Techniques that promote less water use, quicker drying time and more efficient bitumen extraction have already been developed, resulting in significant reductions in tailings pond size and faster reclamation. In March 2012, an alliance of 12 oil sands producers was formed to improve environmental performance in the oil sands. Canada's Oil Sands Innovation Alliance (COSIA) will initially focus on four environmental performance areas: tailings, water, land and greenhouse gas emissions, and will publicly report on environmental performance goals. The members have signed an agreement to combine efforts, share their research and eliminate duplication in an effort to accelerate the development of technologies and processes that speed up the reclamation of tailings ponds and environmental performance in the other environmental priority areas.

Tailings Seepage Recapturing and Monitoring Systems

Cross-Section View



Source: Ministry of Environment and Sustainable Resource Development, Government of Alberta.

Aussi disponible en français sous le titre : Sables bitumineux : Gestion des résidus.

Revised February 2013