OIL SANDS

Tailings

our challenge

Tailings management remains one of the most difficult environmental challenges for the oil sands mining sector. There are currently more than 170 square kilometres of tailings ponds in Alberta.

our actions *

By working with industry, communities and academic research centres, Alberta is developing technologies that will speed up the transformation of tailings into reclaimed land, eventually eliminating tailings ponds as they exist today. In the meantime, strict regulations and a broad and intensive monitoring program are in place to mitigate potential impacts.

fast facts

> Tailings are made up of natural materials including water, fine silts, left-over bitumen, salts and soluble organic compounds.
  - They also include solvents that are added to bitumen during the separation process.
> Ponds are used to manage tailings while they settle and are a safe alternative to having tailings enter the watershed.
> Tailings ponds provide up to 90 per cent of a company's water needs through the reuse of pond water, significantly reducing the amount of fresh water used.
> Comprehensive monitoring programs have not detected impacts from tailings ponds on surface water or potable groundwater.

Photos courtesy of Suncor Energy Inc.

FRESH, CONSOLIDATED TAILINGS (TOP) ARE CONVERTED TO A FUNCTIONING WETLAND SIX YEARS LATER (BOTTOM).

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Canada

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management

> In 2009, the Alberta Energy Resources Conservation Board issued Directive 074 with aggressive criteria for managing tailings:
  - Companies are required to reduce tailings and provide target dates for closure and reclamation of ponds.
  - The Directive also lays out timelines for operators to process fluid tailings at the same rate they produce them, which will eliminate growth in fluid tailings.

> Work continues on the Alberta government's Tailings Management Framework which will drive further operator action to reclaim tailings ponds (also know as legacy ponds).

> Industry must have effective bird deterrence systems in place under the government's approval requirements for tailings ponds.
  - Deterrence systems are designed to prevent birds and waterfowl from landing on the ponds.

monitoring

> All tailings ponds are constructed with groundwater monitoring. Where seepage is detected, government requires a recapture system to return the tailings to the pond.

> No process water from tailings ponds may be discharged into any water course.

research and technology

> Efforts continue to develop new tailings performance criteria, management technologies and practical solutions to reduce and potentially eliminate tailings ponds as we know them today.
  - The Alberta government has allocated $32 million to support clean energy research being driven by the University of Alberta.
    - A $25-million research partnership between the University of Alberta and the Helmholtz Association of German Research Centres focuses on cleaner energy production, with an emphasis on the oil sands.
    - $7 million is allocated specifically to support tailings research underway in the university's School of Energy and the Environment.
  - In 2010, a number of oil sands operators announced plans to work together in a cohesive effort to advance tailings management practices.

future of tailings

> There will always be a need with oil sands mining to set aside an area to remove water out of tailings.

> With all new development, instead of traditional tailings ponds industry will use active treatment ponds, which help prepare fine tailings for the drying process.
  - These fine management systems will be dramatically smaller than current tailings ponds and remove the need for long term storage.