

## PARTNER PERSPECTIVE

# R&D Drives Oil Sands Reclamation at Syncrude

Canada's oil sands industry has come a long way since a household washing machine first successfully demonstrated hot water extraction of heavy bitumen from the sand. In the decades that followed, conscious investments in research and development have transformed the oil sands into a viable and responsible industry.

At the fore of innovation is industry pioneer Syncrude Canada Ltd. It has always maintained a leadership role in creating and developing technologies to responsibly mine, extract and upgrade high quality crude oil from the oil sands, and to reclaim the land it uses.

When Syncrude was first established in 1964, it was really a research project designed to prove that oil could be produced economically from the oil sands deposits in Northern Alberta. It was an industry in its infancy where solutions to unlocking the mysteries of the oil

sands needed to be imagined, tested and implemented because they simply didn't exist.

"There isn't a lot of off-the-shelf technology for this industry. It was all invented here," says Glen Rovang, Manager of Syncrude's Research & Development Centre, in Edmonton.

Today, R&D continues to open doors to new and better ways to manage the oil sands resource.

In 2014, Syncrude invested \$107 million towards technologies and processes to improve the reliability of its operation, reduce costs and address environmental issues. In fact, over half of its research expenditures are directed to environmental projects including a reclamation research program that focuses on landscape creation and performance, with emphasis on watersheds.

The Sandhill Fen Watershed research project, located in a portion of Syncrude's former East mine, is a unique example. Not only is it the

industry's first and largest example of fen watershed re-establishment, it is also the first reclaimed landform in the oil sands built on a foundation of mine tailings. After just four growing seasons, it is on a trajectory toward success. "It can take a very long time for a fen to evolve naturally, and we're trying to speed that up through reclamation," said Jessica Piercey, Project Leader. "The lessons we learn here will help us develop future wetland areas equal in productivity to what was here before mining occurred."

Eight multi-year research programs involving a number of universities are collecting data on hydrology, wetland and terrestrial plant response, carbon dynamics and climate conditions associated with the fen. The information being gathered will improve wetland reclamation best practices for Syncrude and the oil sands industry.

One of the participating researchers,

University of Alberta professor Lee Foote, says that "the Sandhill Fen continues to develop as a template on which natural processes and time are hard at work. Colonizing plant communities are sorting themselves out along soil gradients; hydrologic connections are evident, and; wildlife populations are re-establishing."

Based on the success of the Sandhill Fen, Syncrude is now constructing another fen nearby.

Syncrude openly shares its research and technologies through collaborative industry groups such as Canada's Oil Sands Innovation Alliance (COSIA).

Sharing knowledge makes Syncrude a better performer operationally and environmentally, and advances the oil sands industry in general. A dedicated effort to research and development both financially and collaboratively, ensures the oil sands industry remains at the forefront of innovation.



Syncrude's Sandhill Fen watershed research project was built on a foundation of mine tailings in a 54-hectare section of a former oil sands mine. It was re-vegetated in 2012 with more than 40 types of native plants and an additional 80 types of native plants are growing without having been planted. Birds are now visiting and nesting in the fen. Fens are an important Boreal forest peat land and this large-scale reconstruction effort underscores Syncrude's commitment to returning the land it uses to a condition similar to that prior to disturbance.