

EARTHZYME ALLEVIATES GRAVEL SHORTAGE



Story by Stephanie Hackett - Photo by Bob Nyers

When Base Plant Projects realized Syncrude's road building material was in short supply, they teamed with Mildred Lake Mining to seek a solution.



"We knew it was a viable technology, but we didn't know if the construction and application would work."

-- Angus Munro

The heavy equipment operators in the North Mine have compared the road using EarthZyme to a paved highway.

"A few years ago we realized our current sand and gravel resource we need for road construction would soon be in short supply," said Jovan Radmanovic with Base Plant Projects. We have to extend the mining roads and build new ones every year to sustain budgeted productivity and maximize available time of the heavy hauler fleet. These roads have to be 40 metres wide and able to support the biggest trucks in the world."

Together, they looked at several options. "The obvious solution was to continue using gravel and start hauling it from public granular pits, but after looking into this, we realized they are 30 kilometres away and would require the use of smaller trucks to transport, which would significantly increase the cost of getting the material to site," said Jovan.

However, a more economical solution was found utilizing the clay that is prevalent throughout the North Mine. "When mixed with clay and water, EarthZyme changes the properties of clay, resulting in a substance similar to rock," said Jovan. "We encounter clay every day in our mines, so we saw the potential."

In 2009, a test section was built by Mine Operations and the product was

applied to one-half width of the roads to see how it would perform. "It was tested first on a low-traffic haul road at the Mildred Lake site," said Jovan. "Trucks capable of carrying 380 tons used on this road and the test were showing promising results. There were no cracks in the road."

In fact, the EarthZyme worked so well that it was tested on a larger scale in 2010.

"We built an entire road, in 2010, using EarthZyme instead of just a 300-metre section," said Angus Munro, operations support with the project. "We knew it was a viable technology, but we didn't know if the construction and application would work."

Although the use of gravel was almost completely eliminated on this road and replaced with a mixture of clay, EarthZyme and water, there were some issues to work out.

"We soon realized weather can adversely affect the construction of the EarthZyme road," said Angus. "The product doesn't set well in cold weather and rain. It cures best in warm weather."

An intensive review was completed in 2010, with learnings applied the next year. Base Plant Projects construction specialist George Clark

played a significant role said Jovan. "George supervised the contractors, ensuring the road was built properly. There were a lot of unknowns and learnings we were going through and George provided a lot of feedback and guidance."

"We learned that the design, equipment used, and time of year we built roads, all affect its quality," said Ken Bell with Mildred Lake Operations Support.

The objectives for 2011 were to select the right equipment, improve road design and lower the costs.

"The biggest and best road built since starting this project W4 access road. We fully expect it to be in service for many years," said Brayden Kijewski, operations support with the project.

Heavy hauler operators in the North Mine say that it performs better and is harder than conventional roads. "It's a lot smoother and easier to travel on -- similar to driving on pavement," said Angus.

In 2012, all haul roads in the North Mine will be built using EarthZyme.

About two to three kilometres of new haul road in the North Mine is built each year.



Syncrude

Syncrude Canada Ltd. is one of the largest producers of crude oil from the oils sands in Canada. Based in Fort McMurray, Alberta, Canada, Syncrude's current capacity allows them to supply 15% of Canada's petroleum requirements. In 2011, Syncrude produced 105.3 million barrels of Syncrude Crude Oil.

Benefits of EarthZyme Application at Syncrude Mine Sites

Reduces Rolling Resistance

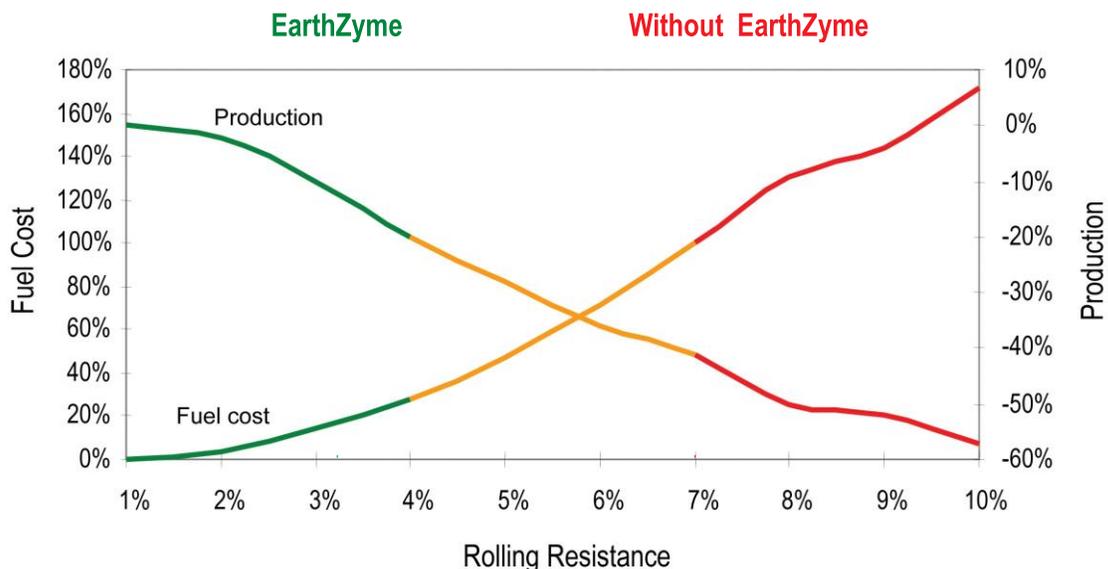
EarthZyme has proven to reduce the rolling resistance of a haul road from 7% to 2.7%, a reduction of 61%. Referencing the chart below, this produces a reduction in fuel cost of 90% and an increase in haul fleet productivity of 35%.

Reduction of Materials Costs

EarthZyme reduces material costs by utilizing high clay content soils, which are not normally considered quality road building materials, and allows for the reduction or elimination of gravel when building a high quality road.

Reduction of Maintenance Requirements

EarthZyme treated roads result in reduced maintenance requirements due to the improved engineering properties achieved through the increase in density after treatment, which results in an increase in CBR and a reduction in permeability and swell.



Relationship between rolling resistance and decreased fuel consumption and decreased haul fleet productivity.