

## Canada Lithium rides the cleantech wave



BY ALISHA HIYATE

### SITE VISIT

LACORNE TOWNSHIP, QUE. — A mink scuttles across some new ice at the perimeter of a retaining pond at **Canada Lithium's** (CLQ-V) Quebec property, presumably after catching itself a meal.

It's an idyllic scene and the lithe creature's presence in the pond — less than 50 metres away from the edge of the old tailings pond — belies the site's industrial past.

"They only fish in very clean water," says Mitchell Lavery, manager of the Quebec project and a director of Canada Lithium, during a late October visit to the property.

The mink's appearance at the past-producing site may well be an indication of just how pure the mineralization is at the project, 60 km north of Val d'Or.

With no sulphides and less than trace amounts of magnesium, that clean ore is one of the keys to the viability of a modern lithium mine here.

In its past incarnation between 1955-65, the mine produced 272,000 tonnes of ceramic and chemical-grade spodumene concentrates, and some lithium carbonate and other products. But this time around, instead of selling spodumene, a low-grade intermediate product, to the glass and ceramics industries, Canada Lithium



CANADA LITHIUM

Contract drillers at Canada Lithium's Quebec lithium project, 60 km north of Val d'Or. The company recently finished a 7,000-metre verification and delineation drill program at the past-producing property.

is planning to upgrade that spodumene into high-grade lithium carbonate for the lithium-ion batteries that will power many upcoming models of electric car.

Even with its relatively small size, the project has already attracted the attention of Japanese trading house **Mitsui**, which signed a marketing deal with Canada Lithium in April.

That's because with a defined historic resource at the Quebec project, the junior

has a head start in the suddenly hot lithium market, which has gathered steam this year as electric vehicles (EVs) come closer to market.

"There's no one that we are aware of that will come onstream within the next three to five years," says president and CEO Peter Secker. "As far as we know, we're the only (lithium) company that has a timetable to development for North America."

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Moreover, not every lithium deposit can produce the high-grade lithium carbonate that automakers need for EV batteries.

But the clean mineralization at the Quebec property, as well as its relatively high grade — historical production at the mine averaged 1.25% Li<sub>2</sub>O during its 10 years of operation — bode well for the hardrock deposit.

The Quebec project holds a historic resource of 15 million tonnes grading 1.14% Li<sub>2</sub>O, based on 400 historic drill holes, but: “Until we get assays back, we won’t be able to say everything is as advertised,” Lavery says.

1.1-1.2% Li<sub>2</sub>O — or double the historic resource.

Secker says he’s very confident in the new conceptual number, based on the mine’s status as a past-producer, and 10 years’ worth of data from drilling and the underground workings.

The company has completed an internal scoping study based on the historic resource estimate, and a prefeasibility study is under way. The prefeasibility will examine the economics of a 15-year operation, producing 19,200 tonnes of 99.5% lithium carbonate from 1.2 million tonnes of pegmatites per year, with construction starting as soon as 2011 and production

notably a capped, 150-metre-deep shaft, which has three levels of workings — still exists at the project. There’s also access to power at 4¢ per kilowatt-hour and all of the benefits of being located in a well-established mining district, including paved roads and skilled labour.

With all of this, the company is in a good position to capitalize on the recent lithium boom. But Canada Lithium isn’t a Johnny-come-lately of the lithium scene. The junior bought the project in May 2008 for 6 million shares and \$350,000 from **Iamgold** (IMG-T, IAG-N), and the junior’s interest in the light metal extends back further, to 2006, Lavery says.

Then, the company was called Black Pearl Minerals (it changed its name in January 2009) and Lavery was starting to notice a growing number of battery applications for lithium appearing on the market.

“What we were seeing were lithium batteries in computers and electronic apparatuses, and hybrids were around and becoming more popular,” he says. “Then they started talking about the full electric cars.”

Lavery convinced the company’s CEO at the time to make a move into lithium, with the purchase of the Thompson Bros. lithium property near Snow Lake, Man., where a near-surface deposit with 2 million tonnes of mineralization had already been outlined.

The company has since dropped the small-tonnage project, but it seems to have scored a prize with the Quebec project, the largest known lithium pegmatite project in Canada. In fact, it recently announced that it’s dropped its only other project, a brine project in Nevada, to focus on the property.

“Everybody (in management) got on board with the idea that lithium was the future,” Lavery says of the company’s first foray into lithium in 2006.

Three years later, it looks like that could very well be the case.

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Those assays will start to come back in late December, and a National Instrument 43-101 resource estimate is due out in February, followed by a prefeasibility study by the end of the first quarter.

The company recently finished a drill campaign twinning roughly 26 historic holes, and doing some deeper drilling down to 500 metres to extend the orebody. The deposit, which is open at depth and has only been drilled previously to 320 metres, also saw some new geotechnical and metallurgical holes, with a total of roughly 7,000 metres being drilled at the 12-sq.-km project.

In November, and based on new modeling of old diamond-drill data from the 60 historic surface holes and 340 underground holes, Canada Lithium released a “conceptual target estimate” for a resource of 29-30 million tonnes grading

following the next year. The study will consider open-pit mining to the 150-metre level and a subsequent feasibility study will look at going deeper.

While Secker can’t disclose the results of the internal scoping study, he can give a rough idea of capital and operating costs based at similar operations. The capital costs at a slightly smaller pegmatite operation being developed in Australia by **Galaxy Resources** (GXY-A) are around \$135 million, so the company expects its costs would be similar, at around \$150 million. In terms of operating costs, Secker says the Quebec project would be in the middle of the cost curve (99.5% lithium carbonate has recently sold at around US\$3.20-3.50 per lb., according to an independent marketing report).

The site has been completely rehabilitated, but some infrastructure —

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## 'Sexy' lithium

At Canada Lithium's core shack in Val d'Or, Secker explains why lithium is "sexy." The metal has three times the energy of nickel hydride and one-third of the weight, and batteries made with lithium work at very low temperatures and have a 10-15 year life. All of this makes them a leading candidate to power EVs.

Lithium-ion batteries are already widely used in batteries for cameras, laptop computers, and cell phones, but electric cars could mean much bigger growth.

A report by Cormark Securities on lithium investment opportunities pegs current lithium demand at 117,000 tonnes lithium carbonate, with a quarter of that coming from battery production. Cormark sees steady annual growth of 7-10% in the lithium market, driven mostly by electric and plug-in hybrid-electric vehicles (PHEVs).

"Our total HEV/PHEV/EV vehicle forecast is for a total of 2.3 million vehicles by 2015, each containing between 0.5 kg and 7.5 kg of lithium (2.7 to 39.9 kg lithium carbonate)," reads the report, released in September. "Since HEVs, which use less lithium, should continue to dominate in that timeframe, additional lithium demand from the auto industry should be 5,400 to 7,800 tonnes (28,730 to 41,500 lithium carbonate)."

There are still questions about lithium-ion batteries' safety and relatively high price that could stop them from becoming the dominant power source for EVs. Add to that the concerns about whether much infrastructure will exist to handle charging up EVs, and the ability of the electricity grid to support them in large numbers.

But with the first EVs scheduled to trickle onto the market starting next year, demand is set to rise. The all-electric Nissan Leaf (widely available in 2012), the Ford Focus EV (due out 2011) and the Chevrolet Volt plug-in hybrid EV (due out in late 2010) will all

be powered by lithium-ion batteries. And although most hybrid vehicles use nickel metal hydride batteries, Toyota is planning to switch its Prius hybrid over to lithium-ion batteries next year, (pushed back from 2009 as originally scheduled).

Canada Lithium has its eye on Detroit — which it points out is only a 12-hour drive away from its project, and which will receive some of the Obama administration's recently announced US\$2.4-billion in grants for EV and EV battery research.

Still, North American adoption of electric cars is expected to lag — Secker

believes the U.S. will be "last off the block."

That's where Canada Lithium's deal with Mitsui comes in, as part of a double-pronged strategy. Asia has already shown itself to be the leader in terms of EV battery technology and EV infrastructure, and while Canada Lithium keeps on top of the North American market, Mitsui will have Asia covered. Mitsui has the exclusive rights to market product from the Quebec project in Japan, China and Korea for one year, and has the option to extend the agreement for six subsequent one-year terms.

Secker, an expat Aussie who joined



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Canada Lithium president and CEO Peter Secker (right) speaks with the contract drill supervisor at the company's Quebec lithium project.

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Canada Lithium in September, lived and worked in China for years as vice-president of operations for Sino Gold and the head of Australian company Michelago. He says China in particular is ahead of the curve when it comes to electric vehicles. The country is aiming high, targeting fully half of its vehicle production to be electric by 2020.

“That’s where the Chinese especially — and they are right ahead of most of the world in terms of lithium-ion battery developments — that’s where they’re focusing their future growth: in electric vehicles and electric hybrids,” Secker says.

“The Chinese don’t just look for today or tomorrow, they look forward 20 to 30 years’ time; they plan for the future,” he continues. “And that’s why you’re seeing a significant focus on electric vehicles.”

With a growing middle class in Asia, demand for vehicles will only rise.

Secker notes that Asia already has a considerable market for electric scooters, which take up most of China’s lithium production.

## *The nitty-gritty*

The geology at the Quebec project is not complex. The core on display at the core shack shows the geology is pretty simple, consisting of dark green volcanics, grey

granodiorite, and mottled white pegmatite, which contains green hits of spodumene.

The pegmatite dykes that contain much of the spodumene at the Quebec project are hosted mostly in a medium-grained, hornblende mica granodiorite. There are seven parallel, mineralized zones, some of which outcrop at surface, and which average about 20 metres wide. Dyke No. 7 is up to 50 metres wide, with increasing width at depth.

While the mining itself would likely be straightforward, getting the ore to battery-grade lithium carbonate would be a little more complex.

Brines are the focus of much lithium talk because they are relatively cheap sources of the light metal, but metallurgical testing at laboratory SGS Lakefield Research has already proved that they aren’t the only sources of high-quality lithium. Testing has shown that battery-grade 99.6% lithium carbonate can be produced from the pegmatites at the Quebec project.

The process involves crushing and grinding, flotation to produce spodumene concentrate (testing has produced a concentrate grading 6.5%  $\text{Li}_2\text{O}$  with a 90% recovery), roasting the concentrate at 1,000°C, then acid-roasting it at 250°C. Water leaching would be the final step to produce lithium carbonate.

SGS is fine-tuning the flow sheet after preliminary test work was successful; the lab has begun the first stage of pilot-plant metallurgical test work, using 20 tonnes of core from the recent drilling campaign and other pegmatite material from the project.

Although the company would be a small player in a small but growing market, Secker says that in a sector dominated by a few large producers in Chile, Argentina, Australia and China, there is lots of interest in the company from end users who are after security and quality of supply, rather than rock-bottom prices.

As for **Sociedad Química y Minera’s** (SQM) (SQM-N) grip on lithium prices — the company has used its clout in the past to put the squeeze on the competition — Secker sees the industry’s dominant lithium producer having less influence going forward.

“I think when the market was smaller, and we’re talking back in 2000-2002, they were able to (influence) the market,” he says, noting it will become harder to do so as the market grows.

He adds: “This market is going to be big enough for all new producers.”

At presstime, Canada Lithium traded at 45¢ in a 52-week trading range of 4.5-89¢.

The company has 146 million shares outstanding and a market cap of \$65.8 million.