



Saturday, July 28, 2007

## Franconia's Birch Lake project could lead to underground mines, 550 jobs

by Nick Wognum

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DRILL BARGE operating on Birch Lake near Babbitt. Franconia Minerals contracted with IDEA Drilling to probe up to 2,500 feet below the lake surface. The large poles on each corner, called "spuds" reach to the lake bottom to stabilize the barge. Photo by Nick Wognum

At 78, Ernie Lehmann gets around on a drill rig with ease. It's familiar territory to the geologist who seeks to create 550 jobs with an underground mine on Birch Lake.

Prospecting runs in Lehmann's blood and this time he may have hit the jackpot with a mineral deposit near Bob Bay under Birch Lake.

Drilling on land and through the bottom of the lake has revealed an area with copper, nickel and precious minerals such as gold, platinum and cobalt.

Lehmann believes there is over 100 million metric tons below the lake and another 83 million metric tons three miles away at the Maturi site, just east of the South Kawishiwi fork off the north end of Birch Lake.

Lehmann, through his company Franconia Minerals, showed a video on the project last week and gave a tour of the facilities in Babbitt as well as the drill barge on Birch Lake.

Looking and finding

The first find of copper nickel mineralization in the area dates back to 1948 and exploration has been ongoing since then. According to the DNR, over 2,100 drill holes have been drilled since 1951, looking for copper and nickel. According to a 1977 study, nine potential copper-nickel deposits have been identified with over 4.4 billion tons grading 0.66% copper and 0.20% nickel.

When the DNR decided in 1985 to resample cores from a hole drilled in the 1970s and found two meters of copper, nickel and platinum group metals, it took a few years to see the results. Lehmann got involved in 1985, buying leases and drilling holes in the area around Birch Lake. Partners such as Utah International and INCO came and went but Lehmann stayed the course.

Then, in 1997, the Minnesota

Natural Resources Research Institute (NRRI) suggested there may be PGMS in an area below Birch Lake. In 2000 and 2001,

Lehmann drilled 2,500 feet below the lake bottom from a barge.

He returns in 2007 with better financial backing and some very promising results. But what's needed now is to change the status of the findings from inferred to indicated, one step closer to mining.

The players

Franconia has 15,000 acres of private and state leases in and around Birch Lake.

Maturi was acquired by Franconia from INCO and includes a shaft sunk by AMAX in the early 1970s. At the Maturi site, mineralization dips at a 45 degree angle starting at 200 feet down and going as deep as 3,000 feet.

The Birch Lake deposit sits in an area that is 8,000 feet long by 1,200 feet wide with mineralization depths of up to 200 feet in an area 1,600 feet below the lake surface.

Not far away are three other potential mine sites. One is owned by Teck Cominco and likely holds the largest quantity of copper nickel.

Polymet is the other major site and is currently in the permitting stage.

Duluth Metals is exploring the area near the Maturi deposit (See separate story).

"We are licensed to use the same process as Polymet for recovery. The process was invented for Polymet but it's not owned by Polymet, they have a license as well," explained Lehmann.

"That's an important consideration because that process allows us to recover the platinum group metals. Teck Cominco has a process somewhat similar but their's doesn't recover the platinum group metals and for us at Birch Lake we're four times the platinum-palladium grade than the other deposits are, it's very important that we recover the PGMs. It's a significant value.

Expensive business

The two mines, Maturi and Birch Lake, would likely cost over \$616 million to build, almost double the cost Polymet is looking at, according to Lehmann.

"Polymet, however, was able to achieve considerable savings by purchasing portions of the former LTV plant," said Lehmann.

Total estimated operating costs are figured at \$25.87 per ton for Birch Lake and Maturi mines. Total revenues, which are highly dependent on market prices, could be \$300 million per year.

On hand Wednesday was Bill Brice, former head of the DNR Minerals Division, and Jeff Nelson of the state Department of Employment and Economic Development.

"We have had excellent support from the state agencies, DNR and MPCA along with Iron Range Resources and DEED. We have a line of credit with DEED and IRR for \$2.5 million provided we spend \$3 for every \$1 on the line of credit."

That money helps pay for drilling costs as well as testing done on the cores which are initially analyzed in Babbitt before being sent out to independent labs for testing.

Drilling underwater

The drilling process starts with a seven-inch casing that goes 50 feet into the bedrock. Then a six-inch casing is inserted inside to keep any possible contaminants out of the lake.

"We try to avoid anything going into the lake," said Lehmann. "The water and cuttings are taken out and removed from the barge."

Once into the mineralization zone, drillers insert a plug in the hole and then a wedge to drill four new holes from the original hole.

The 20-foot long wedges, which weigh around 800 pounds and cost \$8,500 each, are left in the drill holes.

"On land the cost to drill is around \$150,000 per hole but on water it's over \$200,000 a hole. We're spending some money here."

However moving from one location to another is much quicker on water. The drill barge was moved in an hour and a half Wednesday morning.

#### Keeping clean water

"The DNR samples the water quality by checking inside and outside the boom as well as upstream and downstream from the barge. We provide the boat and pay for all the testing," said Lehmann.

When drilling is finished on a hole, which can take 20 days or longer, cement is poured down the holes, as deep as 900 to 1,400 feet. "We have a cement mixer on a service barge," said Lehmann. One bag of concrete fills 10 feet of drill hole.

"We are very conscious of that process and we're very meticulous about it," said Lehmann.

He pointed to two containment booms that circle the barge and said absorbent pillows are stored on board in case of an actual spill.

All of the water and rock filings from drilling are stored in tanks on the barge and removed daily and stored on land.

#### Sulfide issues

Environmental groups have the project on the radar, specifically because of the sulfides found in the mineralization zone. When mixed with air and water, acid runoff can occur.

"The ore itself is considered to be a low sulfur bearing ore," said Lehmann. "We need to recover those sulfides to process them in to useful metals."

The ore would be transported from Birch Lake and Maturi to a processing plant. There the metals are removed and the remaining waste rock is expected to have sulfur levels of .05 to .08 percent.

The company believes the remaining sulfides can be neutralized with lime to form gypsum, used in wallboard. At least half of the tailings created would go back into the mine. No surface subsidence is expected.

Franconia is already working with state and federal regulatory agencies discussing permitting issues, but the main focus now is getting the drilling work done.

"We're drilling for two reasons. We need to infill drill to get a better definition of the deposit from the standpoint of confidence and from the standpoint of designing a mine," said Lehmann.

"We're also trying to put together a bulk sample for a pilot plant and a metallurgical run hopefully in the second quarter of 2008. We need to put together about 50 short tons of materials for that. Originally we were going to put down a prospect shaft for that but the price tripled between February and November of 2005.

"We want to finish this round of drilling by October. And we hope to be drilling, Forest Service and BLM willing, in the fourth quarter of this year in the Maturi deposit," said Lehmann.

Franconia hopes to have test results from the pilot plant by the middle of 2008. "We would try to scope out the environmental impact statement by mid-year 2008 and put together the final feasibility study with construction starting in 2009," said Lehmann.

#### Next steps

Lehmann knows the company must proceed down the road of developing a plan for a mine while continuing to drill. The company lists potential annual mine production between the two sites of 74 million lbs. copper, 19 million lbs. nickel, 2.9 million lbs. cobalt, 7,400 oz. gold, 33,000 oz. platinum and 68,000 oz. palladium over a mine life of 24 to 26 years.

Approximately 550 jobs would be created over the life of the operation following up to 1,000 construction jobs the first two years.

#### Back to underground mining

Using shafts and headframes similar to the Pioneer Mine, ore would be crushed underground and then hoisted to the surface. From there it would be transported to a concentrator.

Lehmann said it was likely a room and pillar mining method was initially planned. "But now because the deposit is quite a bit thicker than we anticipated, we may need to change the mining method to a long haul stope process," said Lehmann.

Conceptually the company is talking about producing 10,000 tons per day from Birch Lake and 8,000 tons from Maturi once it got online two years after Birch Lake.

After being run through a concentrator, 1,600 tons per day of concentrate would be generated. The concentrate would be shipped to a hydrometallurgical facility to make cathode copper, nickel-cobalt precipitate and PGM precipitate.

Big fish or small fry

Franconia Minerals was started in 1998 on the back porch of Lehmann's summer home in Franconia, MN which is four miles south of Taylor's Falls.

In the mining industry, buyouts are common with the big fish swallowing smaller companies.

"It is possible somebody will come along and decide to buy us out one day," said Lehmann. "In the meantime we will try to continue to add value by continuing with the drilling and planning."

Area economic impact

A mining operation like the one envisioned by Franconia would likely generate millions of dollars in tax revenues.

Because the state owns the lake bottom, the school trust funds stands to benefit from the Birch Lake Project royalties.

"That could be a big number," said Lehmann.

Drilling near an island near the south shore has already set off finger pointing between the state and federal government over who owns the land.

"When we drilled by the island we found 200 feet of mineralization," said Lehmann. "I expect there will be all kinds of lawsuits between the state, the feds and private landowners."

And, the company believes there are national implications as well. According to Franconia, the impacts from the minerals include:

**Copper:** The U.S. imports 40 percent of its copper which used in electrical and plumbing systems. Demand exceeds worldwide production.

**Nickel:** The U.S. imports 100 percent of the nickel needed. Nickel is used in stainless steel, surgical instruments, hybrid vehicle batteries and jet engines.

**Platinum Group Metals:** The U.S. imports 90 percent of PGMs needed. PGMs are used in making glass, petroleum products, computer hard drives and catalytic converters.

**Cobalt:** Used in jet engines, gas turbines, medicine.

But Lehmann the geologist is still a Minnesotan who believes Franconia can help the area rebound from the economic downturn in mining over the past 20 years.

"To me the issue is all about people. We need to create jobs for people, we need to have ways they can earn a decent living," said Lehmann.

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