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• ALASKA

Fire River resumes mining at Nixon Fork

Barr hands over leadership as young junior transitions from explorer to producer; first gold from high-grade ore expected in June

By SHANE LASLEY
Mining News

Less than two years after completing its initial public offering, Fire River Gold Corp. is positioned to commence production at its Nixon Fork Gold Mine in Interior Alaska. Building stockpiles of ore with gold grades of more than 1 ounce per metric ton, the young junior is preparing to start up the historical mine in June.

With Fire River Gold nearing a point where it will generate its own revenue stream, company founder Harry Barr is stepping down as president and CEO of the fledgling company and handing the reins to Richard Goodwin, who is now president and COO.



HARRY BARR

Barr said Goodwin, who has more than 25 years of experience in underground mine operations, engineering consulting and corporate management, is what Fire River needs as it transitions from explorer to producer.

"I have always focused on exploration, acquisitions and financings throughout my career. I am very proud to say that during my tenure as CEO with Fire River Gold, our team has either met or exceeded all of our objectives to date. From a shareholders point of view, I believe it is time to let a production team take this company to the next level," Barr said. "I am exceptionally proud of the team of people I leave in charge. Richard Goodwin has always been the driving force behind the technical side of Fire River Gold and more specifically the development of the Nixon Fork Project to date. He has done an exceptional job building a highly regarded technical team that is poised to restart the Nixon Fork Gold Mine."

Though a mill, underground development, an airstrip, camp, power plants and all the permitting were in place when Fire River bought the project in 2009, the company did not rush into resuming production at the high-grade gold mine. Instead, it completed a thorough geological and engineering evaluation of the project.

In 18 months of poring over documents left behind by two previous operators, Fire River re-logged several thousand meters of



SHANE LASLEY

Recent drilling in the lower extent of the 3000 and 3300 zones of the Crystal Mine have returned encouraging results and is expected to add to the minable high-grade ore available in this area.

drill core and assessed the condition of the mill and mining equipment, a process that culminated in two preliminary economic assessments. The first, released in September, evaluates the viability of reprocessing tailings left behind by previous operators of the high-grade gold mine. The second, finished in February, investigates the resumption of underground mining at Nixon Fork.

Both studies returned positive economic results, and Fire River gold is pursuing a hybrid operation capable of churning out 50,000 ounces of gold per year.

Mining under way

Setting Fire River's operational plan in motion, crews at Nixon Fork began mining in March. About 6,375 metric tons of ore averaging 42.1 grams per metric ton, or about 1.35 ounces per metric ton, is set to be mined at the onset. This higher grade ore found in the upper portions of the Crystal Mine will provide the initial feedstock for the mill, which is scheduled to be fired up in June.

Based on re-assaying more than 10,000 meters of core left behind by the previous operator, Nixon Fork has an underground resource of just over 100,000 metric tons averaging 30.1 grams, or nearly 1 ounce, of gold per metric ton. That's enough ore to keep the 150-ton-per day mill operating for two years.

An initial 47,250 metric tons of ore – estimated tonnage for the first year of production, including a three-month ramp-up

period – is expected to average 34.1 g/t gold, putting about 49,000 ounces of gold in Fire River's vault.

"We are anticipating a very gentle ramp-up, about 25 percent capacity in June, 50 percent in July and 75 percent in August," Goodwin said.

The preliminary economic assessment for underground mining estimates operating costs will run US\$434 per metric ton of ore, or US\$447 per ounce of gold over the first two years.

At a gold price of US\$1,200 per ounce, the project delivers an internal rate of return of 549 percent and a net present value of US\$60.9 million on an undiscounted cash flow of \$64.3 million over the first two operating years.

The roughly US\$6.3 million in capital costs required to put the mine back in production is projected to be paid back within three months of firing up the plant.

"We are very happy with the result of this PEA," Barr said. "It demonstrates what we have always believed about the Nixon Fork Gold Mine; that it has the potential to generate significant profits with a minimum start-up capital requirement."

Adding a CIL circuit

The PEA completed in September assessed the viability of completing a 250-metric-ton-per-day cyanide circuit for recovering gold from an existing tailings pond at Nixon Fork. The historical tailings pond contains an indicated resource of 92,000 metric tons averaging 7.9 g/t gold and an inferred resource of 48,000 metric tons at 7.4 g/t gold.

Determining that it would not only benefit from the added gold coming from the tailings pond, but also increased recoveries from the underground ore, Fire River decided to complete the carbon-in-leach

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NIXON FORK

circuit.

Goodwin told Mining News that the mill will be fed year-round with ore at a rate of 150 tons per day from underground mining, and during the summer months, the CIL portion of the recovery circuit will be topped off with an additional 100 tpd of the gold-bearing tailings.

The construction of the cyanidation circuit is expected to be finished in July and added to the recovery system in August.

Goodwin said he expects the three circuits to catch about 96 percent of the nearly 1-ounce-per-ton ore being mined at Nixon Fork – with 20 percent recovered as free-gold in the gravity circuit, about 60 percent reporting to flotation and the remaining 17 percent captured in the CIL system.

“During the summer season all of that happens but we are also going to add 100 tons per day of wet tailings from the historic operation directly into the cyanidation circuit,” he explained.

At the 79 percent recovery rate estimated in the PEA, adding 100 tpd of tailings will add some 18 ounces of gold per day to the take at Nixon Fork.

The mining engineer said the tailings will not need additional milling or processing before being added to the CIL circuit.

Transition complete

While mining the upper portions of the Crystal Mine, crews will drive a tunnel to the Mystery Mine about 500 meters to the northeast and ramp down to the lower portions of Crystal.

“After the first six months we will start mining the Mystery side as well as the down-dip extensions on the Crystal,” Goodwin said.

Recent drilling in the lower portion of Crystal has returned encouraging results and could add to the minable high-grade ore available in this area.

Hole N10U-038, drilled at the lower extent of the 3300 Zone, cut 13.7 meters averaging 28.8 g/t gold, including a 1.3-meter subsection that averages 118.5 g/t gold and 1.32 percent copper. Hole N10U-040 intercepted 1 meter averaging 202.7 g/t at the lower extension of the 3000 Zone.

Connecting the Crystal and Mystery mines with an underground tunnel will provide multiple benefits to Fire River. One key advantage will be when crews begin mining the Mystery, underground trucks can haul the ore directly to the mill, which is adjacent to the Crystal portal.

Importantly, the link also will provide secondary egress to both mines, increasing the safety of underground miners.

The third advantage of digging the tunnel will be to provide a platform for drilling the highly prospective area between the two historical mines. Due to the vertical pipe-like columns of the ore-bodies at Nixon Fork, underground stations provide a better angle for drilling.

“We consider the gap between the mines to be probably our best exploration target, Goodwin explained. “This ore-body is difficult to drill from surface – it really needs to be drilled from underground.”

Two prospects, Southern Cross and J5A, have already been identified between the two mines. Based on drilling by previous operators, J5A has an indicated resource of 7,500 metric tons averaging 16.7 g/t, or about 0.5 oz/t. Southern



SHANE LASLEY

Fire River Gold plans to reprocess 100 metric tons per day of tailings from historic mining at Nixon Fork. It is estimated that the 140,000 metric tons of tailings average more than 7.5 g/t.

Cross has an inferred resource of 11,100 metric tons at 19.6 g/t, or about 0.6 ounces per ton.

While Fire River's operations team continues to search for additional ore for the mill in and between the two historical mines, the company has imported an exploration expert to investigate the multiple other prospects on the property.

“We have commissioned Curt Freeman of Avalon

(Development Corp.) to take all of the information and come up with a plan for surface exploration,” Goodwin told Mining News.

The mining engineer said having Freeman investigate outlying exploration targets will allow his team of seasoned miners to focus on producing gold.

“We have really made the transition from junior explorer to producer,” Goodwin said. ●

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• ALASKA

Pebble partner issues pre-sale appraisal

Releasing an economic assessment of the huge Pebble Project, Northern Dynasty's managers tout junior's merits as takeover target

By SHANE LASLEY
Mining News

Northern Dynasty Minerals Ltd. has hung a "for sale" sign on its 50 percent stake in the enormous Pebble copper-gold-molybdenum project. Since Wardrop Engineering Inc. completed an appraisal of the Southwest Alaska deposit, executives have touted the company's merits as a takeover target.

"Given the state of the current industry, the competition in the industry and the commodity market conditions we believe that going forward there will be competitive interest in Pebble from a broad range of potential acquirers," Northern Dynasty Executive Chairman Robert Dickinson informed investors at BMO Capital Markets 2011 Global Metals and Mining Conference.

Wardrop's appraisal was in the form of a preliminary assessment that investigates the economic value of Pebble, and highlights Northern Dynasty's value in light of additional capital Anglo American plc must spend to earn its 50 percent stake in the Southwest Alaska project.

The study investigates three potential development cases:

Investment decision, which describes an initial 25-year open-pit mine life upon which a decision to initiate mine permitting, construction and operations may be based;

Reference, which contemplates 45 years of open-pit mine production; and

Resource, which is based on 78 years of open-pit mine production and seeks to assess the longer-term value of the project in current dollars.

All three scenarios demonstrate robust economics, and could provide a major with a steady stream of base and precious metals for decades.

"After many years of exhaustive geological, environmental and socioeconomic study, as well as intensive engineering effort, this preliminary assessment confirms Pebble's potential as a modern, world-class mine that provides decades of benefits to shareholders, to the people and communities of Alaska, and to the U.S. and global economies," said Northern Dynasty President and CEO Ron Thiessen.

The 45-year case produces 31 billion pounds of copper, 30 million ounces of gold, 1.4 billion pounds of molybdenum, 140 million ounces silver, 1.2 million kilograms (2.6 million pounds) of rhenium and 907,000 ounces of palladium, while mining only 32 percent of the total Pebble mineral resource.

Potential suitors

Though Dickinson did not specify any company as a potential suitor to buy out Northern Dynasty, he dropped the name Rio Tinto plc more than once during his March 1 presentation.



ROBERT DICKINSON



RON THIESSEN



SHANE LASLEY

From a nearby vantage point, visitors look out over the Pebble deposit. A recent study by Wardrop Engineering Inc. determined that at a rate of around 220,000 metric tons per day, the project could produce 31 billion pounds copper, 30 million ounces gold, 1.4 billion lbs molybdenum, 140M oz silver, 1.2M kilograms (2.6M lbs) rhenium and 907,000 oz palladium over the first 45 years, while mining only 32 percent of the total mineral resource.

"Pebble is a unique and valuable asset, and we believe it to be very attractive to a wide spectrum of the world's major miners and smelter groups – both, as you know, have very healthy balance sheets and are actively seeking major mining opportunities. We know the majors are looking to replace dwindling resources with their development pipeline, and we also know this is not occurring through the traditional exploration," the Northern Dynasty chairman said. "Most of these types of major projects are developed by consortiums of major groups; such as Anglo American; such as Rio Tinto and of course others."

Rio Tinto already owns nearly a 19.9 percent of Northern Dynasty, the maximum allowable stake without violating the company's shareholders rights plan.

Dickinson also pointed out the geological similarities between Pebble and Bingham Canyon, a porphyry copper mine owned by Rio Tinto.

"Bingham has operated continuously for more than 100 years and is the most profitable mine in the Rio Tinto network. It produces more than 20 percent of the

United States' copper needs and in addition produces significant volumes of gold, molybdenum, silver and rhenium – and all of these important metals are found at Pebble," he expounded.

Aside from its nearly 10 percent stake in Pebble, Rio Tinto has all but pulled out of Alaska in recent years. Starting with the sell-off of its 70 percent interest in the Greens Creek silver mine in 2008, the mining giant has systematically liquidated its Alaska assets. These include the copper-rich Ambler volcanogenic massive sulfide project and its back-in right at Kiska Metals Corp.'s Whistler porphyry gold-copper property. The company also optioned Copper Joe – a copper-gold-molybdenum prospect it discovered south of Whistler in 2006 – to Kiska.

While Pebble's 80 billion pounds of copper and 5.6 billion pounds of molybdenum makes it an attractive asset for majors looking to add base metals to their portfolios, its 107 million ounces of gold also may be a target for a major focused on the yellow metal.

"Pebble is a game-changer; it will be extremely valuable for base or precious

metals companies looking to replace dwindling reserves to their production pipelines," Dickinson touted.

Barrick Gold Corp. – which already has a foothold in Alaska through its 50 percent stake in the Donlin Creek gold project – has several copper-gold porphyry projects in its portfolio. Last March Barrick spent US\$474 million to buy a 25 percent interest in the Cerro Casale in Chile from Kinross Gold Corp., increasing its stake in the copper-gold project to 75 percent. With its 23.2 million ounces of gold and 5.8 billion pounds of copper, Cerro Casale is much smaller than Pebble.

"Geologically, Pebble is a superior asset. It is the fifth-largest porphyry copper deposit ever discovered and, at the same time, is the world's single-largest deposit of gold," Dickinson explained. "Pebble is precisely the kind of world-class resource that most of the major mining companies are competing for now."

Robust economics

The economic study completed by Wardrop envisions an open-pit mine with a flotation circuit and secondary gold recovery. Mill throughput, according to the assessment, is estimated to be 219,000 tons per day for the first 25 years, rising to 229,000 tpd for the 45-year and 78-year cases.

Over the 45-year base case, annual production is envisioned to be 690 million pounds of copper, 667,000 ounces of gold, 31,000 pounds of molybdenum, 27,000 kilograms (58,000 pounds) of rhenium and 20,000 pounds of palladium.

"The Pebble Project is among a handful of mineral projects around the world with the potential to meaningfully enhance global production of copper, gold and molybdenum at a time when worldwide demand is increasingly outstripping supply," said Thiessen.

Dickinson told investors attending the BMO Conference that the Wardrop study demonstrates a negative cash cost of

see APPRAISAL page 6

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NORTH OF 60 MINING

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APPRAISAL

US11 cents for every pound of copper produced at Pebble after byproduct credits.

Using long-term metal prices of US\$2.50/lb copper, US\$1,050/oz gold, US\$13.50/lb molybdenum, US\$15/oz silver, US\$3,000/kg rhenium and US\$490/oz palladium, the study foresees robust economics for the companies that develop Pebble.

For the Pebble Partnership, the 45-year case yields a 14.2 percent pre-tax internal rate of return, a 6.2-year payback on initial capital investment and a US\$6.1 billion pre-tax net present value at long-term metal prices and a 7 percent discount rate.

At current prevailing metal prices, the 45-year scenario yields a 23.2 percent pre-tax IRR, a 3.2-year payback on initial capital investment and a US\$15.7 billion pre-tax NPV at a 7 percent discount rate.

Considering Anglo American is expected to have a remaining balance of about US\$1 billion it must spend to earn its 50 percent stake in the Pebble Project at the time construction begins, the economics for Northern Dynasty is even more robust.

Dickinson told investors that Anglo American has contributed US\$325 million so far, and the project's 2011 budget is estimated to be between US\$90 and US\$95 million.

Based on construction costs of US\$4.7 billion estimated in the Wardrop study and discounting Anglo American's remaining commitment, Northern Dynasty estimates its portion of capital to build a mine at Pebble to be about US\$1.85 billion.

For the Vancouver, B.C.-based junior's 50 percent interest in the Pebble Project, the 45-year case yields an 18 percent pre-tax and 15.4 percent post-tax IRR, a 4.7-year pre-tax and 5.3-year post-tax payback on initial capital investment, and a US\$3.6 billion pre-tax and US\$2.4 billion post-tax NPV at a 7 percent discount rate at long-term metal prices.

At current prevailing metal prices, Northern Dynasty's 50 percent interest in Pebble yields a 30.2 percent pre-tax and 25.1 percent post-tax IRR, a 2.6-year pre-tax and 3.1-year post-tax payback on initial capital investment and an US\$8.3 billion pre-tax and US\$5.6 billion post-tax NPV at a 7 percent discount rate.

"How do you really value a project that is going to kick out \$2 billion (annually) at

long-term metal prices for a very long time – perhaps well over 100 years?" Dickinson queried.

Attached disclaimer

All the scenarios put forth in the Wardrop study are based on building an open-pit mine to extract the ore at Pebble, which may not be the ultimate mine-plan put forth by the Pebble Partnership.

"Given its size, structure and polymetallic nature, the Pebble deposit presents a great deal of flexibility in near-term and long-term development options," Northern Dynasty explains.

The company said that while near-surface mineral resources in the western portion of the deposit are most efficiently developed through open pit methods, the potential exists for underground mining (in particular block-caving) to emerge as the preferred mining method for the deeper and richer Pebble East deposit.

Northern Dynasty's economic assessment was delivered with the disclaimer that it does not represent the views of its partner in the project. A point underscored by Anglo American CEO Cynthia Carroll during a March 3 presentation in Anchorage.

"And here I would like to be clear that the Preliminary Economic Assessment issued last week by our partner in the Pebble Project, Northern Dynasty Minerals Ltd., represents just one view of the possibilities of the project. Northern Dynasty (managers) feel they need to provide information about the project to their shareholders even though that information is still preliminary," Carroll said during a breakfast meeting sponsored by the Alaska Resource Development Council. "The Pebble Partnership will only publish a detailed plan once that has been properly developed and approved by Pebble's board. The fact is that the Pebble Partnership is still studying multiple options as it works towards completion of a pre-feasibility study in 2012."

The Pebble Partnership, under the leadership of CEO John Shively, has been careful not to feed the rumor mills with project scenarios until a final mine-plan is engineered and can be presented to and receive feedback from the stakeholders in the Bristol Bay region.

"John Shively has made it repeatedly clear that when the Partnership does have a preferred option, he and his team will engage in extensive further consultation in advance of taking any proposal to permitting," Carroll said.

Though Northern Dynasty has not disclosed why it released the Wardrop study ahead of a final mine-plan signed off by all the parties involved in the Pebble Project, all indications are the junior is looking for a global company to buy out their 50 percent share of the venture in the near term.

"Our original premise on this project is that we felt Northern Dynasty would be at the project until we felt we were at a position that we weren't adding any more value to the project with our input. And that we would be able to demonstrate the true value of this so that the major mining companies would probably look at this in some sort of a corporate transaction," Thiessen told investors at the BMO conference.

Dickinson implied that such a transaction may be coming soon.

"As management, we believe there is an opportunity for Northern Dynasty to capture the longer term value of our interest in this project in the months ahead. And we, at Northern Dynasty, have the resources, we have the people, and we have the motivation to ensure that investors in Northern Dynasty receive maximum value for their shareholdings," he said in concluding his remarks. ●

NORTH OF 60 MINING NEWS

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• ALASKA

Can mining and Alaska co-exist?

Anglo American CEO says benefits from Pebble would be felt worldwide; a premature veto of the project also would reverberate

By SHANE LASLEY
Mining News

Can mining and Alaska co-exist? This query was the crux of Anglo American plc CEO Cynthia Carroll's message to Alaskans attending a March 3 gathering in Anchorage sponsored by the Resource Development Council.

Carroll, whose company owns a 50 percent stake in the Pebble Project, said economic benefits from developing the enormous copper-gold-molybdenum project would emanate from Southwest Alaska and extend around the world, a message that resonated with the pro-development crowd that filled the room to hear the early morning speech.

"The United States of America and the State of Alaska has a world-class ore-body in its territory. An ore-body on state land designated for mining, whose development would bring billions of dollars of investment and help generate many hundreds, perhaps thousands of much-needed jobs for many decades. The USA and the wider world depend increasingly on the kinds of minerals that lie underground, north of the villages of Iliamna and Newhalen and west of Nondalton," Carroll said.

Opposition groups assert that the Bristol Bay region, where the deposit is located, is not suitable for large-scale mining, and have petitioned the U.S. Environmental Agency to use its authority to strike down the possibility of developing Pebble, even before its 50-50 owners, Northern Dynasty Minerals Ltd. and Anglo American, submit applications for operating permits – an option the federal agency has yet to rule out.

Addressing the potential threat to development at Pebble, Carroll said, "The EPA has an important role to play in the permitting process. The intervention of the agency at this stage, however, introduces great uncertainty for anyone engaged in economic activity in the region. Uncertainty deters investment at a time when the United States and the State of Alaska need the revenue and jobs that major projects such as Pebble bring to the table."

She said the Pebble Partnership should be afforded a chance to see if it can develop a mine plan that belies the concerns of those that are against developing the mammoth mineral deposit.

"The federal government has put more than a third of your state into protected areas where development is unlikely ever to take place. On the other hand, the State of Alaska has received lands that Alaskans assume will be used to support your economy. Pebble is located on just such lands," Carroll said. "We have been invited in to see whether we can develop those lands. We should be given the opportunity to prove we can do it right."

Financial rollercoaster

The Anglo American CEO prefaced her remarks with an overview of the global economic scene since she last visited Alaska in 2007, characterizing the financial events of the past three years as a "roller-coaster ride."

"Following the collapse of several major financial institutions in late 2008, there was widespread fear of a global economic depression. The world economy



Anglo American plc CEO Cynthia Carroll

suffered a severe setback with a contraction in world GDP, most notably in the advanced economies," she said. "The (United States) and China led a massive coordinated policy stimulus – these interventions helped to stabilize the financial system and support economic activity, particularly in the emerging economies."

Carroll told the audience that growth in emerging economies such as China and India, coupled with the green revolution in developed countries, will help drive up the demand for copper and the need to develop world-class deposits such as Pebble.

"This is what is driving our business today: The world needs metals and minerals now more than ever. The products that Anglo American produces are absolutely vital to fuel growth in developing economies and to support the ongoing technological revolution in developed countries," she said, adding, "For some advanced economies, such as the U.S., the domestic mining industry is central to creating economic growth – from sparking investment in critical infrastructure, to providing the critical minerals for a sustainable, green economy."

The economic benefits of a mine at

Pebble, Carroll said, would center in Southwest Alaska.

"What we have heard over and over again is that large parts of the state still lack basic energy, communication, and transportation services because Alaska has not yet benefited from the infrastructure development that transformed the Lower 48 last century. As a result, the cost of basic necessities like milk and diesel are excessively high. These high costs combined (with) a lack of job opportunities place the very existence of many (Alaska) Native villages at risk," she said. "Pebble can help spur the construction of modern transportation, communication, and energy infrastructure that places like Southwest Alaska desperately need to reduce their cost of living."

Fish and mining

Pebble opponents argue that developing a mine at the colossal deposit would put world-class wild salmon runs in the Bristol Bay region at risk, an assertion Carroll categorically disputes.

"I want to make one thing absolutely clear: Fish and mining can co-exist," the Anglo American CEO avowed. "Much of what I hear from the opposition to Pebble claims that this is not possible. They are purely and simply wrong. With the proper protections, copper mining can co-exist with a healthy salmon fishery."

Carroll cited Red Dog, Fort Knox and Greens Creek as examples of contempo-

rary Alaska mines co-existing with downstream fisheries. She also cited 2010 record salmon runs in British Columbia's Fraser River as a striking example of mining and salmon sharing the same watershed.

"This major river system does not just have one or two copper mines in its headwaters – it has several mines and a whole host of other industries from logging to gravel, agriculture, and extensive urban development. These are industries that have been active for many decades. For example, the Highland Valley mine is the largest copper mine in Canada and has been operating for nearly 40 years. Yet the Fraser River supports a vigorous salmon run. Better still, in 2010 the Fraser River system saw a sockeye salmon return of 34 million (fish) – the highest since 1913," she said.

Despite the mining industry's recent success in co-existing with nearby fisheries, Carroll said the Pebble Partnership must remain diligent in developing a mine plan that ensures the protection of the Bristol Bay fishery – a proposal that will be vetted by a world-class permitting process.

"Over the years, a permitting process has been built up which applies among the most rigorous environmental standards in the world. Your standards can ensure co-existence of a healthy mining

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• ALASKA

Miners poll hot, cold on Alaska climate

Survey highlights industry's respect for state's mineral potential, concerns about its regulatory uncertainty and inconsistencies

By **CURT FREEMAN**

For Mining News

The Fraser Institute recently released its "Survey of Mining Companies, 2010/2011," an annual survey of exploration and mining companies that gauges the pros and cons of working in various countries around the world. This year the survey results came from 494 mining companies working in 79 jurisdictions and representing cumulative exploration expenditures of more than US\$2.4 billion in 2010.

There was a bit of honey and a bit of vinegar for Alaska in this report. Let's do honey first: starting with the Policy/Mineral Potential index with no land use policies in place and assuming industry "best practices," Alaska scored first (that's right Dorothy, first) with a score of 93 out of a possible 100! To my recollection, that's the first time Alaska has ever scored at the top spot in any Fraser Institute survey! Nice, but not real, since there are land use policies in place, lots and lots of them. So, with current land use policies in place, Alaska ranked a respectable 9th place for Mineral Potential, behind perennial mining powerhouses like Chile, Quebec and Nevada. Now for the acetic acid: in its Policy Potential Index, a measure of all things related to regulatory policy, Alaska scored a not so respectable

The author

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CURT FREEMAN

21st behind several Canadian and Australian jurisdictions and three western states. But a close look at the details that went into that score should sound alarm bells in our fair state. For example, in regard to uncertainty in the enforcement of existing regulations, Alaska scored well down the list, behind Colombia in fact! Dismiss that bit of bad news if you like, but perception is reality, and this industry and this state need to address this perennial beef, not hide from it. There is more vinegar: in the category relating to uncertainty about enforcement of environmental regulations, Alaska was even

farther down the list, behind such environmentally aware places like the Democratic Republic of the Congo and China. Never mind that environmental regulations are nearly nonexistent in some countries, or are codified but largely ignored. And this one really, hurts: concerning regulatory duplication and inconsistencies, we scored well below Madagascar. For the love of Mike, Madagascar?! And to underscore the famous Will Rogers quote, "There are lies, damn lies and statistics," under the category entitled "Security (includes physical security due to the threat of attack by terrorists, criminals, guerrilla groups, etc.)," something less than 5 percent of respondents said this category was a mild deterrent to investment in Alaska. Hello? Bears, maybe ... snowstorms in July, perhaps ... a miner carrying a sidearm ... sure, but guerrilla groups? Perhaps these folks need to be informed that guerrillas are big, often hairy folks who carry guns and gorillas are big, often hairy folks who don't.

Western Alaska

NOVAGOLD RESOURCES INC. announced that it has entered into an agreement to sell to **NOME GOLD ALASKA CORP.** its alluvial gold properties comprising 11,500 acres of fee-simple patented mining claims near Nome. Nome

Gold Alaska will pay US\$21 million in three installments, and also will provide a letter of credit for US\$4 million as an environmental reclamation bond. NovaGold is also soliciting offers for the balance of its land package around Nome, including in-town real estate lots and substantial sand and gravel holdings, as well as its Rock Creek and Big Hurrah gold properties. The company had previously written off US\$116.4 million in value from the Rock Creek project and is carrying the project on its books at zero value. For 2011, the company has budgeted US\$8.5 million for the Rock Creek project with a focus on continuing to meet permit requirements and environmental responsibilities. The company also will prepare a preliminary closure plan for the project in the event that its board of directors chooses to close and reclaim the property rather than sell it to another operator.

NovaGold Resources Inc. provided a corporate update for its Donlin Creek Project, a 50:50 joint venture with **BARRICK GOLD CORP.** The partners expended about US\$40.4 million in the fiscal year that ended Nov. 30, 2010. The 2010 work program completed the majority of the environmental and engineering studies required to review the option of

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CARROLL SPEECH

operation, and a healthy salmon fishery," she said.

A choice looms

Pebble opposition groups have employed myriad tactics to stifle development of the primarily copper-gold-molybdenum deposit, the latest of which could stop the project before it enters the permitting process.

"There have been multiple attempts to block Pebble – through a ballot measure, through the Alaska Legislature, and more recently through federal agencies,"

Carroll observed.

Though Alaskans rejected the ballot proposition in 2008 and Pebble-targeted legislation has gained little traction in the Legislature, the possibility that the EPA will exercise its authority under Section 404(c) of the Clean Water Act to prohibit the discharge of material from Pebble looms over the project. This would prevent development of the proposed mine.

The EPA is currently conducting a year-long study on the Bristol Bay salmon fishery and the potential effects of large-scale development on the Southwest Alaska watershed where Pebble is located.

During an opening statement at a U.S. Senate Appropriations Subcommittee hearing March 16 on EPA's 2012 budget proposal, U.S. Sen. Lisa Murkowski, R-Alaska, pressed EPA Administrator Lisa Jackson on the agency's motives in conducting the Bristol Bay study.

"I'm concerned by the process that the EPA is using to conduct a watershed assessment for Bristol Bay. This assessment is in response to a petition from the environmental community to block the proposed Pebble Mine under the Clean Water Act. This is a controversial and very complex issue. I have not taken a position on the mining project itself because I believe it is premature to do so

before the company has even submitted a permit application," Murkowski told Jackson. "For this same reason, the EPA should be completely transparent in conducting this watershed assessment – not simply use it as cover to support a later decision to veto the mine."

Alaska's senior senator previously forewarned, "Any effort by the agency to block responsible development before a project has even been proposed would be unprecedented and would have a chilling effect on the state's economy."

A sentiment echoed by Carroll during her presentation in Anchorage.

"Investors such as (us) look to the regulatory framework of the United States of America as (being) rigorous but reliable. I hope and trust that the EPA will commit to refraining from exercising any premature veto over development in Bristol Bay, and, instead, play its well-established role during the consideration of permit applications," she said.

Carroll called on Alaskans to hold their judgment on Pebble until the partnership presents a plan that can be evaluated by stakeholders and vetted by a rigorous permitting process.

"So I say to you that you face a choice: To grasp this opportunity; reinforce the United States of America and Alaska as a jurisdiction that is open for responsible business; allow due process to continue; leave open the opportunity to reinvigorate an entire region, helping protect, not destroy, (Alaska) Native culture that is critically at risk; open up a major new revenue stream for the Alaska treasury, potentially for many generations of Alaskans; and make decisions on all this only once the information has been made fully available through the most transparent development project that Alaska has ever seen; or, to listen to disingenuous propaganda that seeks to force you into a false choice, between mining and fish," Carroll concluded. ●



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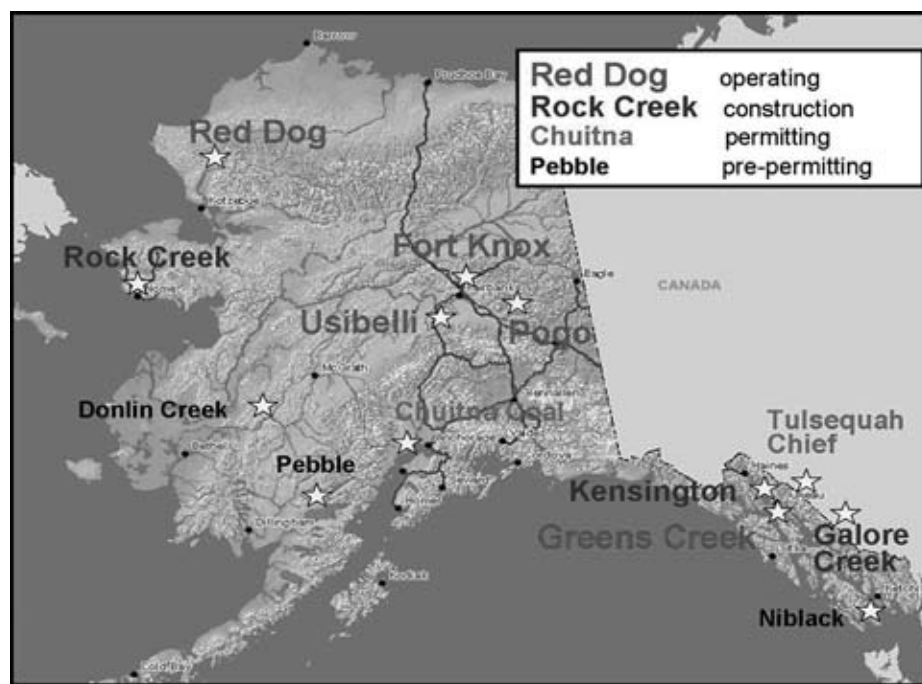
using natural gas as the primary power source at the mine site, as opposed to using diesel to generate power as contemplated in the 2009 feasibility study. The partners engaged an energy consultant to lead the gas line studies. An analysis on the impacts to project infrastructure related to transportation and logistics is ongoing. The natural gas option would require building a 12-inch buried pipeline that would run approximately 315 miles from the Cook Inlet to the mine site. With power costs projected to be 25 percent of total operating costs, utilization of lower-cost natural gas could significantly reduce operating costs. The original feasibility study will be updated with the new natural gas line information with the revised feasibility study targeted for completion in the second half of 2011. The partners are then expected to prepare and file construction and operations permit applications for the project.

NovaGold Resources, Inc. also announced that it has budgeted approximately \$10 million for additional studies at the Ambler project in the Brooks Range to determine the environmental and engineering aspects of developing the Arctic volcanogenic massive sulfide deposit, as well as to fund exploration and geotechnical drilling at the site. The company continues to work with **NANA REGIONAL CORP.** to establish a memorandum of agreement for collaborative development of the Ambler region, including district consolidation and infrastructure development that would benefit both the project and local communities.

The biggest news in the past month was the announcement by **NORTHERN DYNASTY MINERALS LTD.** of an impressive preliminary assessment technical report for its Pebble copper-gold-molybdenum project near Iliamna. The preliminary assessment considered three mine development cases comprising 25, 45 and 78 years of open-pit mining and a nominal processing rate of 200,000 tons per day.

The 45-year Reference Case processes 3.8 billion tons of material with a strip ratio of 2.1:1 and an average grade of 0.46 percent copper, 0.011 ounces of gold per ton and 214-parts-per-million molybdenum. The 45-year Reference Case yields a 14.2 percent pre-tax internal rate of return, a 6.2-year payback on initial capital investment of US\$4.7 billion and a US\$6.1 billion pre-tax net present value at a 7 percent discount rate and long-term metal prices.

At current prevailing metal prices, the 45-year Reference Case yields a 23.2 percent pre-tax rate of return, a 3.2-year payback on initial capital investment and a US\$15.7 billion pre-tax net present value at a 7 percent discount rate. The 45-year Reference Case produces 31 billion pounds copper, 30 million ounces gold, 1.4 billion pounds molybdenum, 140 million ounces silver, 1.2 million kilograms rhenium and 907,000 ounces palladium while mining only 32 percent of the mineral resource. For the 45-year Reference Case, cash costs after by-product credits comes in at a negative US11 cents per payable pound of copper. Copper-gold concentrate produced at the mine would be transported via a slurry pipeline to a new deep-water port on Cook Inlet. There it is de-watered and bulk shipped to offshore smelters. Other products of the process plant are gold doré, which would be flown to market from an existing aviation facility at Iliamna, and molybdenum concentrate, which would be bagged and trucked to the port for shipment. Ongoing investigations undertaken



during the first 25 years of mining, including construction of a shaft to access deeper but higher grade resources, would determine the optimal mining method and plan for subsequent phases of development. The potential exists for underground block cave development at a mining rate of 150,000 tons per day to emerge as the preferred mining method for phases of development beyond 25 years. The process plant employs conventional crush-grind-float technology and equipment with a nominal throughput of 200,000 tpd, as well as secondary gold recovery. Average mill throughput for the first 25 years would be 219,000 tpd, rising to 229,000 tons per day for the 45-year and 78-year cases.

Other required project facilities and infrastructure, included in the project capital cost quoted above, include a 378 megawatt natural gas-fired turbine power plant at the mine site, an 86-mile transportation corridor to Cook Inlet for road and pipeline rights-of-way and a new deep-water port on Cook Inlet. Construction of the Pebble project would take four years, and employ a peak labor force of 2,080 people. The operations workforce averages 1,120 people over the first 25 years of mining.

And there is a lot more info, way more info, but wait, there's more: the study also noted that significant exploration potential remains at several known targets outside of the resources considered by the assessment. For example, immediately adjacent to the Pebble deposit and east of the resource-bounding ZG1 fault, is the high-grade intersection in drill hole 6348 which

returned 949 feet grading 1.92 percent copper equivalent grade. The area to the east of this intersection remains completely open.

FIRE RIVER GOLD CORP. announced results obtained from additional underground drilling at the Nixon Fork project. New significant intercepts include 92.2 grams per metric ton gold over 3.6 meters in hole N10U-033, 33.2 g/t gold and 165.2 g/t silver over 1.5 meters in hole N10U-028, 28.8 g/t gold over 13.7 meters in hole N10U-038, 202.7 g/t gold over 1.0 meter in hole N10U-040 and 6.0 g/t gold over 0.8 meters at 3000 Zone. Other activities at the project include diamond drilling with two underground Hagby drills, rehabilitation of the main ventilation raise, and construction of the cyanidation plant with a targeted completion date of July 2011. The company also indicated that test mining and ore stockpiling will begin in March, building a stock pile for the planned re-commissioning of the mill in June.

Interior Alaska

TERYL RESOURCES CORP. announced a new resource estimate for its Gil gold project, which is a 20:80 joint venture with **KINROSS GOLD CORP.** For a heap-leach-only scenario (0.015 ounces per ton gold cutoff), the deposit contains measured resources of 2,283,057 tons grading 0.0304 oz/t gold (69,499 ounces), indicated resources of 9,571,130 tons grading 0.0279 oz/t gold (267,408 ounces) and inferred resources of 8,002,591 tons grading 0.0222 oz/t gold (178,009 ounces). The total gold resource in the heap leach sce-

nario is 514,916 ounces. If a mill-only scenario is considered at a 0.0225 oz/t gold cutoff, the deposit contains measured resources of 1,307,343 tons grading 0.0394 oz/t gold (51,483 ounces), indicated resources of 4,652,938 tons grading 0.0382 oz/t gold (177,870 ounces) and inferred resources of 2,544,964 tons grading 0.0314 oz/t gold (79,949 ounces). The total gold resource in the mill scenario is 309,303 ounces. The report recommended additional definition and exploration drilling at North Gil, the Gil Intersection and the Sourdough Ridge zones.

INTERNATIONAL TOWER HILL MINES LTD. announced the hiring of Tom Irwin as the company's construction manager at its Livengood gold project. Following a period where he spent six years as the Commissioner of the Alaska Department of Natural Resources, Tom is returning to his mining engineering roots. From 1992 to 1996, he was vice president of **FAIRBANKS GOLD MINING, INC.**, a subsidiary of **KINROSS GOLD**, and responsible for engineering at Fort Knox during mine design. From 1996 to 1999, he was the operations manager responsible for mine start-up and operation at the Fort Knox mine and general manager of the mine from 1999 to 2001. From 2001 to 2003, he became the vice president, business development for Fairbanks Gold Mining, responsible for new project permitting, business development and governmental and public relations. Welcome back to the industry, Tom!

CORVUS GOLD INC. provided an update on its LMS gold project in the Goodpaster District. Starting in March, joint venture partner First Star Resources Inc. intends to carry out a winter drilling program consisting of over 1,000 meters of oriented core, which it proposes will be followed up with an aggressive summer core drilling program of 5,000 meters. First Star intends to use the results from these programs for an updated resource estimate on the project by the end of 2011.

Corvus Gold Inc. also provided an update on its West Pogo gold project in the Goodpaster District. Joint venture partner **FIRST STAR RESOURCES INC.** intends to carry out a 3-D induced polarization geophysical survey in May as well as geological mapping and geochemical surveys in June, with the aim of testing areas presumed to be underlain by favorable geology, and expanding the geochemical expres-

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sion of mineralized zones. In July, First Star plans to drill over 1,500 meters of oriented core to test an east-northeast striking gold and silver zone.

Alaska Range

On March 1, 2011, **TERRA MINING CORP.**, whose wholly-owned Alaska subsidiary, **TERRA GOLD CORP.**, is Corvus subsidiary **RAVEN GOLD**'s joint venture partner on the Terra gold project in the western Alaska Range, was acquired by Alaska newcomer **WESTMOUNTAIN INDEX ADVISOR INC.** With the acquisition, WestMountain has acquired the right to earn a 51 percent interest in the Terra gold project from Raven Gold by spending a total of US\$6.0 million. WestMountain can further increase its ownership to 80 percent with a US\$9.5 million capital investment over a four-year period. WestMountain is currently developing its 2011 drilling program to further define the gold vein along strike and at depth. Welcome to Alaska, WestMountain Index Advisor Inc.!

KISKA METALS CORP. announced that the first phase of a 31,000-meter drill program will commence in early March on its Whistler copper-gold project in the Kahiltna District. The objective of the 2011 program is to delineate the four previously identified early-stage gold-copper porphyry discoveries (Island Mountain, Raintree West, Raintree East and Rainmaker) and explore for new gold-copper porphyry deposits in the Whistler Orbit (an approximate 5-kilometer radius centered on the Whistler deposit). This effort will include grid-based drill testing of high priority areas as outlined by geophysics, geology and reconnaissance drill holes. Drilling will commence at the Raintree

West target and will consist of systematic step out drill holes north of the discovery section, where evidence suggests a strengthening porphyry system.

Concurrent with the Raintree West drilling, a grid-based drill program will test prospective areas of the Whistler Orbit with shallow holes to obtain geological information and locate areas of strong alteration and/or mineralization beneath the thin layer of overburden. Up to 50 holes will test geophysical targets derived from magnetics and induced polarization data generated from a 3-D survey conducted in 2009. Results of this shallow drilling will guide further drilling with the larger drill capable of testing targets to greater depths. A second rig will be mobilized in May to follow up on targets generated from the shallow drilling campaign and to expand on known mineralization.

A total of 20,000 meters of drilling will be completed in the Whistler Orbit in 2011. The exploration program at the Island Mountain will start with a detailed airborne magnetic geophysical survey in April to help refine drill targets and highlight new target areas in preparation for drilling slated to start in June. Two drill rigs will be mobilized to complete 11,000 meters of drilling at Island Mountain. One drill will be dedicated to expanding on a section-by-section basis mineralized zones identified in 2010. The second drill will focus on step out drilling to expand Island Mountain mineralization, to conduct reconnaissance drill testing of early stage surface and geochemical targets defined in 2010 as well as additional targets elsewhere on the property such as Muddy Creek, a gold target where 150 rock samples averaged 4.72 g/t gold over an irregular 3.2 kilometer-by-3.3 kilometer, or about 2-mile-by-2-mile, area.

Southeast Alaska

HECLA MINING PLC announced year-

end 2010 production results from the Greens Creek mine on Admiralty Island. The total cash cost per ounce of silver produced at Greens Creek for the year was negative US\$3.90 per ounce versus negative US\$1.93 per ounce in 2009. Total production costs for the year were US\$3.36 versus US\$7.65 for 2009. The average grade of ore mined during the year was 13.30 oz/t silver, down from the average grade of 13.01 oz/t in the year previous. For the year, the mine produced 7,206,973 ounces of silver, 68,838 ounces of gold, 25,336 tons of lead and 74,496 tons of zinc.

The decrease in silver production year-over-year is due to lower silver ore grade. The lower silver grade along with the higher zinc and lead ore grades were expected and are due to differences in the sequencing of production according to the mine plan. Silver production was up in the fourth quarter over the same period in 2009 due to higher silver, gold, lead and zinc grades and recoveries, and increased mill throughput.

The mine is working to optimize mill capacity and has successfully increased throughput by about 10 percent since 2008 to 2,200 tpd, and will work towards increasing throughput to 2,250 tpd in 2011. The total decrease in cash cost per ounce of silver produced year-over-year was primarily due to increased by-product production credits, partially offset by higher treatment and freight costs, production costs, and production taxes. The higher treatment and freight costs in 2010 are due to increased price participation charges by smelters. Greens Creek mined 800,000 tons containing 9.8 million ounces of silver in 2010 and added 728,800 tons containing 8.6 million ounces of silver to reserves. On the exploration front, underground drilling continues to define high-grade reserves and resources with good widths in the NNW zone along two newly-defined

limbs below the current workings and along strike for at least 500 feet.

Significant 2010 drilling results from the NNW zone include 8.4 feet grading 0.17 oz/t gold, 43.7 oz/t silver, 16.4 percent zinc and 10.5 percent lead and 21.2 feet grading 0.15 oz/t gold, 28.7 oz/t silver, 15.8 percent zinc and 6.4 percent lead. Drilling in the 200 South zone has defined two separate mineralized zones that are typically barite-rich and contain higher values of precious metals relative to other zones in the mine. Significant 2010 drilling results from the 200 South zone include 15.8 feet grading 0.31 oz/t gold, 12.6 oz/t silver, 17.2 percent zinc and 3.45 percent lead and 30.3 feet grading 0.06 oz/t gold, 37.4 oz/t silver, 7.5 percent zinc and 3.2 percent lead. Surface and underground drilling continues to define the North East contact which represents a continuation of the Greens Creek mine contact. The contact has been folded underneath the existing mine workings; it extends near surface at Cub Creek less than a mile northeast of the mine infrastructure, and dips below and is sub-parallel to the mine infrastructure. Recent wide-spaced drilling has defined discontinuous mineralized intervals along the contact which has a folded strike length of over 5,000 feet and down dip extension of 3,000 feet. Exploration expenditures at Greens Creek in 2011 should exceed \$8 million. Two drills are expected to work underground all year and the surface exploration program has three drills and a number of surface mapping and sampling crews in the spring and summer.

The company also announced revised resource estimates for the mine which include probable reserves of 8,243,100 tons grading 12.1 ounces of silver per ton, 0.092 ounces of gold per ton, 3.5% lead and 9.3% zinc, mineralized material of 789,800 tons grading 4.1 ounces of silver per ton, 0.063 ounces of gold per ton, 2.0% lead and 4.6% zinc, and other resources of 2,343,300 tons grading 11.8 ounces of silver per ton, 0.089 ounces of gold per ton, 2.9% lead and 4.4% zinc. Since 1987 Greens Creek has produced a total of about 170 million ounces of silver and approximately 1.17 million ounces of gold and currently has over 154 million ounces of silver reserves and resources.

UCORE RARE METALS INC. announced its first industry-compliant resource estimate for the Bokan Mountain rare earth elements project. Resources were generated from 8,728.76 meters of core drilling from 143 holes at the Dotson Ridge and I&L zones. At a cutoff grade of 0.5 percent total rare earth oxides, the deposit hosts an inferred mineral resource of 3,669,000 metric tons grading 0.746 percent total rare earth oxides, with 39 percent of TREO being the higher value heavy rare earth oxides. This resource contains 60,325,000 pounds of TREO. Individual light rare earth element grades, in kilograms per metric ton, at this 0.5 percent TREO cutoff were 0.77 kg/t lanthanum oxide, 2.2 kg/t cerium oxide, 0.26 kg/t praseodymium oxide, 1.08 kg/t neodymium oxide and 0.28 kg/t samarium oxide. Individual HREE grades, in kg/t, at this 0.5 percent TREO cutoff were 0.03 kg/t europium oxide, 0.27 kg/t gadolinium oxide, 0.05 kg/t terbium oxide, 0.29 kg/t dysprosium oxide, 0.06 kg/t holmium oxide, 0.15 kg/t erbium oxide, 0.02 kg/t thulium oxide, 0.11 kg/t ytterbium oxide, 0.01 kg/t lutetium oxide and 1.88 kg/t yttrium oxide. The new resource begins at surface and is open both at depth and to the east. The company indicated that it is conducting metallurgical research to create a metallurgical flow sheet that optimizes recovery and operating costs. ●

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• GUEST COLUMN

It's time we taught the CEQ to fish

The Council on Environmental Quality can make the world better and help our economy by requiring everyone to obey the same rules

By **J. P. TANGEN**
For Mining News

An ancient Chinese aphorism advises that if you give a man a fish he will eat for a day, and if you teach him how to fish, he will eat for a lifetime. I am going to go way out on a limb here and suggest that contrary to all known experience, government is not uneducable. Here's my simple point: The Council on Environmental Quality has spent the last 40 years screwing things up.

They have interpreted their mandate myopically; they have wasted literally forests of paper on incredibly worthless, unread studies; and worse yet, they have violated their mandate to "encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation...."

Instead of encouraging "harmony," CEQ has precipitated litigation and antagonism. Instead of stimulating "health and welfare of man," CEQ has engineered the out-migration of numerous industries and associated employment. In brief, although the United States arguably is a less-polluted place than it was in 1969 that may be in spite of the efforts of the CEQ, and not because of those efforts.

What I mean is that the CEQ has exported our productivity instead of our standards. In looking over NEPA's charge, I find little that says they are to limit their focus to the "domestic" environment. On the contrary, it addresses the "human" environment; and the last I heard, "foreigners" (at least some of them) are "human," too. It certainly does not stimulate the quality of the human environment to have our domestic production, say of rare earth minerals, driven off shore to a place like the Chinese People's Republic where the environmental controls are wanting.

Throughout the American West, as well as here in Alaska, there is untold mineral wealth. Locatable minerals,

Mining & the law

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J.P. TANGEN

hydrocarbons and even certain common variety minerals can be found in profusion here. Unfortunately, the CEQ process of environmental study after environmental study after environmental study, where no such requirement exists elsewhere in the world, has constipated resource development.

CEQ has now asked for comments on how to "improve" their procedures. They have called upon the public to nominate "projects that will increase the efficiency of environmental reviews conducted under the National Environmental Policy Act." The best nomination of all would be to scrap their existing thinking and start from scratch. For instance, over the past generation, the United States has unquestionably morphed from a producer nation to a consumer nation.

Productive capability has become established in places that do not cling to our environmental and natural resource standards. It is high time that CEQ put its foot down and insist that the source of all constituent parts of any import, including produce, be comprehensively disclosed at the point of entry into the United States. If it cannot be conclusively established that the proposed import was derived from sources that fully comply with domestic standards, that commodity must be refused entry into the country.

It seems only a small stretch to envelop the Environmental Protection Agency into this project. EPA, after all, has the technical skill-set to determine whether a gold mine in Ghana is meeting the NPDES standards. That, of course, would facilitate the resolution of a long list of concomitant problems. First, it would

"Productive capability has become established in places that do not cling to our environmental and natural resource standards. It is high time that CEQ put its foot down and insist that the source of all constituent parts of any import, including produce, be comprehensively disclosed at the point of entry into the United States. If it cannot be conclusively established that the proposed import was derived from sources that fully comply with domestic standards, that commodity must be refused entry into the country." — J.P. Tangen

give EPA something constructive to expend its inexhaustible budget on; next, it would get a whole lot of EPA people out of our hair – they could go bother the people of Ghana; and third, it would make the world a better place.

After all, environmental protection does not stop at the water's edge. If the Clean Water Act is deficient in authorizing such an extra-territorial exercise, perhaps a modest amendment to the definition of "navigable waters" could be embraced. Instead of defining navigable waters as "waters of the United States" perhaps they could be defined as "waters of the World."

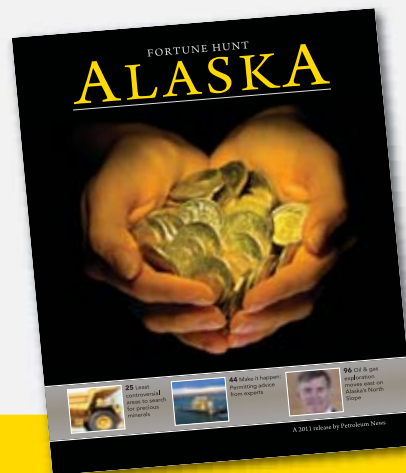
It seems self-evident to me that no one wants to go back to a pre-1969 world where industrial rivers spontaneously catch fire and where lakes are so

deprived of oxygen that the fish can't survive. Unhappily, that is where a whole lot of the world is today. Even as we speak, there are folks in remote locations scratching at the earth to mine the mineral commodities the American public demands for its modern life-style, with no consideration whatsoever for the suspended solids or parts per trillion of unpronounceable pollutants that are flowing downhill and into the nearest receiving water.

If the CEQ is truly out to make the world a better place, as I believe that statute clearly requires, it needs to get off its dead derrière and bring everyone up to at least where we are today. The path to doing so is at our ports. That fishing lesson could feed us all for a very long time. ●

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• NORTH OF 60

Miners: Yukon among best places to work

Alaska leads pack in raw mineral potential, but British Columbia and northern territories lag others with lingering deficiencies

By ROSE RAGSDALE

For Mining News

Relatively little had changed during the past 12 months in how Alaska and Northwest Canada stack up to competing jurisdictions in opportunities for mining investment, according to a widely respected industry survey conducted by a Canadian public policy think-tank.

But a worldwide economic turnaround has created optimism in the mining industry, with more than three-quarters of respondents in the Fraser Institute's Annual Mining Survey 2010-2011 saying they expect to increase their exploration budgets this year.

"In order to attract investment and compete globally, governments must offer sensible, stable mining policies which, above all, uphold the rule of law and respect negotiated contracts and property rights," said Fred McMahon, co-author and coordinator of the survey.

Observing that mining companies prefer stability and certainty above all things in the places where they invest, McMahon said, "Royalty increases and convoluted regulatory schemes create uncertainty in mining, which will only drive mining investment away."

The Fraser Institute has conducted the annual survey since 1997 to provide information to the public and accountability to governments that might otherwise gain little reliable feedback from the mining industry.

"Mining companies are often afraid to talk to governments because they're afraid they will be punished somehow," McMahon

"If you're in the exploration stage, you're more worried about what's going to happen five years from now when you start making money. What the Yukon has managed to do is create a stable regime where people have faith in the future."

—Fred McMahon, co-author, Fraser Institute Annual Mining Survey 2010-2011

said.

The latest survey was based on the opinions of mining executives representing 494 mineral exploration and development companies on the investment climate of 79 jurisdictions around the world. The companies participating in the survey reported exploration spending of US\$2.43 billion in 2010 and US\$1.86 billion in 2009.

This year, Canadian provinces, led by Alberta at No. 1, claimed four of the top 10 spots in the ranking. In addition to Alberta, which scored 90.4, Quebec came in second with 86.50, while Saskatchewan climbed to No. 3 (with a score of 87.5) from sixth place and Manitoba (80.3) held steady at No. 9.

The other provinces and territories generally fared well, with Newfoundland and Labrador placing 13th, Ontario 18th, Nova Scotia 19th and New Brunswick 23rd.

Overall, the top 10 jurisdictions in the latest poll are Alberta, Nevada, Saskatchewan, Quebec, Finland, Utah, Sweden, Chile, Manitoba and Wyoming. Seven of the same jurisdictions ranked among the top 10 last year; the three excep-

tions are Utah, which rose to sixth place from 15th; Sweden, which climbed to seventh from 12th; and Wyoming, which jumped to 10th from 13th. Chile is the only jurisdiction outside of North America that consistently ranks among the top 10.

The bottom 10 overall scores in the survey went to Indonesia, Zimbabwe, Wisconsin, Madagascar, India, Guatemala, Bolivia, Democratic Republic of Congo, Venezuela and Honduras.

Mining friendly Yukon

Of the northern jurisdictions, Yukon Territory stands out as an exceptionally favorable place to do business.

"Yukon scores the best in the region, even ahead of Alaska, and Yukon has the second-best raw mineral potential after Alaska," McMahon said.

Yukon ranked No. 15 among the 79 jurisdictions worldwide included in the survey. It had the highest rank among Canada's northern territories, ahead of Nunavut at No. 44 and Northwest Territories in 52nd place. Yukon also outpolled Alaska at No. 21 and British Columbia in 36th place.

Yukon boasts a mining-friendly political climate and a centralized environmental assessment process that is not split between territorial and federal layers. In addition, most of the territory's land claims are settled.

McMahon said those factors create stability and certainty for mining companies that want to know what they're getting when they invest.

"If you're in the exploration stage, you're more worried about what's going to happen

five years from now when you start making money," he said. "What the Yukon has managed to do is create a stable regime where people have faith in the future."

McMahon added that miners looking at Yukon "feel there's a high level of predictability and transparency in the regulatory taxation regime."

Though the territory dropped down from 11th place last year, he said Yukon's overall scores have changed little in the past three years: 73.0 in 2010-11; 73.9 in 2009-2010; and 72.5 in 2008-2009.

"If you were a student in school and you got those scores on your tests, you wouldn't think there was much difference in them.... That shows the territory has achieved stability and certainty, he said.

Individual survey respondents generally praised their mining experience in Yukon Territory.

"In the Yukon, mining is in the culture," said the president of a consulting company.

Another consulting company president said, "The Yukon has one socio-economic assessment process for projects, eliminating the duplicate federal process that other Canadian jurisdictions have. (It) creates more certainty around the process, expectations, and timelines. Coupled with settled land claims, this makes for a very favorable jurisdiction."

Another consultant observed, "During my 36 years in the Yukon, I participated in the discovery of 18 ore bodies as an exploration geologist. These ore bodies paid for the employment of numerous persons in high-paid jobs over many years. Several of those ore bodies are still being explored and/or mined to this day, creating jobs, infrastructure etc."

The president of a producer company with more than US\$50 million in annual revenue offered this: "In 2009, our Yukon mine created direct employment of approximately 250 people at the mine site, of which one-third are First Nations members and 18 percent from the (local First Nation community.) The mine injected C\$77.1 million into the Yukon economy, paid C\$58.8 million to Yukon suppliers and contractors; paid C\$3.83 million in payroll to Yukon residents who are direct employees of the mine, and likely at least as much in payroll to Yukon residents working for major contractors based full time at the mine; paid C\$1.4 million to commercial airlines flying to and from the Yukon; made C\$11.3 million in payments to Yukon and First Nations governments; and paid

C\$186,000 to local hotels and restaurants; on 2009 production, paid C\$6.9 million in mineral royalties that flowed directly to the local First Nation; (and) paid C\$2.5 million in community development."

And a service and supply company president said, "We have had a significant impact in job creation in our community due to the success of all exploration and mine developments in the Yukon."

Still, the survey detected some rumblings about uncertainty over land claims that remain unsettled in Yukon Territory and the possibility of access to certain lands being lost in designations of wilderness areas, McMahon said.

"Feels like we're on the cusp of the Yukon transitioning from a very prospective exploration and mining jurisdiction to something much less favorable," said an exploration geologist with a producer company with more than US\$50 million in

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continued from page 12

SURVEY

annual revenue.

Raw potential in Alaska

Alaska lost ground in the 2010-2011 survey results, ranking No. 21 with an overall score of 67.6. That's down from 71.7 score a year ago but considerably higher than the 49.8 that the state scored in 2007. Among U.S. jurisdictions, Alaska placed fourth behind Nevada, Utah and Wyoming.

"Alaska's not that bad. Its score means it's ahead of the vast majority of the other states. In mining, the state does a lot better than it does in our petroleum survey," McMahon said.

Alaska also scored better on some individual factors that contribute to the overall ranking. For example, the state took first place in Policy/Mineral Potential (Assuming no land use restrictions in place and assuming industry "best practices") index with a score of 0.93.

"This means that in a perfect world, Alaska would have the highest mineral potential in the world," McMahon said.

Among comments about Alaska from survey respondents:

"Alaska's settlement of all Native land claims during the transition to statehood (has resulted) in private property-type agreements between mineral exploration and local communities," said the president of a consulting company.

Another consultant said, "There was an eight-month permitting procedure to clear a 10-x-10-meter area of brush (not trees) in the Tongass National Forest (in) Alaska. (It) required (the) U.S. Secretary of Agriculture's signature. Totally absurd."

The president of a consulting company offered this: "In Alaska there are already three lawsuits designed to stop a project that is still in the exploration phase."

And another observation from a consulting company president, "Our work is spread out across Alaska and commonly sees us spending significant amounts of money in small villages where work is scarce. Alaska mining wages are more than double the

Alaska average wage so people we hire make good money and spend it in their small communities."

The other northern jurisdictions also attracted high scores in this category with Yukon at No. 2 with a score of 0.90; Northwest Territories No. 8 with a 0.87 score; Nunavut No. 16 with a 0.84 score; and British Columbia ranking 23rd with a score of 0.80

In Policy/Mineral Potential (assuming current regulations/land use restrictions), Alaska dropped to 9th place with a score of

0.67, up slightly from its performance in last year's survey. The state also edged past Yukon Territory in 11th place with a score of 0.66, and far outpaced British Columbia at No. 42 with a score of 0.43. Nunavut ranked No. 50 with a score of 0.38 and Northwest Territories, No. 59 with a score of 0.35. In this category, only Nevada surpassed Alaska among U.S. jurisdictions with a score of 0.73, while Chile topped this ranking with 0.77 score.

Environmental uncertainty in BC

In the Room to Improve category, survey respondents ranked Northwest Territories No. 4 and Nunavut No. 6 among the world's 10 jurisdictions with the most work ahead of them, while British Columbia took 21st place, Alaska 30th and Yukon 38th.

In ranking "Uncertainty concerning the administration, interpretation, and enforcement of existing regulations," and "Uncertainty concerning environmental regulations," the northern jurisdictions' scores ranged from mediocre to poor: Yukon ranked 20th and 34th; Alaska 25th and 51st; Nunavut 46th and 58th; British Columbia 48th and 67th; and Northwest Territories 55th and 69th, respectively.

"BC continues to be viewed poorly, with respondents citing land claims issues, environmental uncertainty, and political turmoil at the provincial level as reasons to remain hesitant about investing in British Columbia," McMahon said.

"I think you're in a close enough range that it's very difficult to say whether B.C. has improved or not," McMahon said. "If you were looking at a poll and in one poll a political party got 40 percent and in another poll they got 41 percent, you would say, 'not much going on there.' Frankly, I'd say that's what's happening with British Columbia."

The researcher said mining companies appear to have a long memory. Chief among their concerns about B.C. is security of land tenure, with a familiar name that keeps popping up year after year – Windy Craggy.

The project, located in the far northwestern tip of B.C., was halted in the mid-1990s when the government created a park that enveloped the site following environmental concerns about the proposed mine. "It's the same old story with B.C. ... people still remember Windy Craggy," McMahon said. "I keep expecting some year to get no comments about Windy Craggy but this wasn't the year ... That tells you how long the memories are, and it's a warning to government to get things right because people remember."

Among the comments about conditions in British Columbia:

"In BC, if we need assistance in register-

ing our claims or keeping current, the staff are most helpful," said an exploration company director.

"British Columbia suffers from land claims issues, environmental uncertainties, permitting problems, political problems on several fronts, and a history of defaulting to a dictatorial Supreme Court," said the vice president of an exploration company.

Big headaches in NWT

McMahon said the industry perceives Northwest Territories as having several big negatives, including unsettled land claims, uncertainty over its regulatory structure and relatively poor infrastructure.

In such an environment, he said companies worry about political interference that could result in bad projects getting a green light, while good projects are held up indefinitely.

Among comments from survey respondents:

"We were granted simple NWT land use permits after 8-10 month delays, then had those permits subjected to court challenge by third parties on the basis of 'duty to consult' –you want stability and perceived transparency. This is not the way to get it in Canada (We are not supposed to be a Third World country)," said one exploration company vice president.

The manager of another exploration company said, "The Northwest Territories has too much federal government involvement and a water board that is just totally inefficient and cannot approve anything in a reasonable timeframe."

And another comment from an exploration company vice president: "In the Northwest Territories, the regulatory review process is cumbersome and time consuming. Too many small projects (that have no impact on the environment) are being referred to environmental assessment. These referrals generally come from the aboriginal community where land claims remain unsettled. The federal minister of Indian and Northern Affairs Canada has commissioned a number of reviews with no measureable results, which continues to frustrate industry and in turn stymies new and longer term exploration activities. Until this is solved, the NWT will remain an area known as one, 'not to go to.'"

Regulatory worries in Nunavut

McMahon said he also suspects similar negative factors may be at work in the mining industry's perception of Nunavut Territory.

The companies worry "about all sorts of overlapping regulatory bodies, aboriginal councils and federal councils covering

the same project. They also consider a good deal uncertainty is left over from Nunavut's land claims settlement, and there is a high level of uncertainty about lands being placed off limits in wilderness areas," he said.

In a survey response, the president of a producer company with more than US\$50 million in revenue shared this about Nunavut: "We are working in Nunavut trying to permit an underground gold mine that took seven years and more than C\$20 million in permitting-related costs.

The survey respondents also ranked the 79 jurisdictions on the following attributes:

Duplication and inconsistencies; fair, transparent and non-corrupt legal processes, Taxation regime (Alaska ranked No. 2);

Uncertainty concerning disputed land claims; uncertainty concerning which areas will be protected as wilderness areas, parks or archeological sites; infrastructure (includes access to roads, power availability, etc);

Socioeconomic agreements/community development conditions; trade barriers—tariff and non-tariff barriers, restrictions on profit repatriation, currency restrictions, etc. (Alaska among top six jurisdictions with zero barriers);

Political stability (Alaska and Nunavut among top 12 jurisdictions);

Labor regulations, employment agreements, and labor militancy or work disruptions (Alaska and Yukon among top 15 jurisdictions);

Geological database (includes quality and scale of maps, ease of access to information, etc.) (British Columbia and Yukon among top 12 jurisdictions);

Security (includes physical security due to the threat of attack by terrorists, criminals, guerrilla groups, etc.) (Nunavut was among top 23 with zero deterrents to mining investment. Alaska, Northwest Territories, Yukon and British Columbia ranked among the middle tier of companies with mild deterrents);

Supply of labor/skills (British Columbia placed among the top 12 jurisdictions);

Growing (or lessening) uncertainty in mining policy and implementation (Yukon and Alaska among top 25 jurisdictions);

Composite policy and mineral potential (Yukon and Alaska ranked No. 5 and No. 6, respectively.)

The Toronto-based Fraser Institute is an independent public policy research and educational organization that does not accept grants from governments or contracts for research.

For the complete survey results, visit www.fraserinstitute.org. ●



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• YUKON TERRITORY

Junior ignites second Yukon gold rush

Carlin-style discoveries at Rackla Gold Project excite industry, investors; Atac drafts aggressive exploration campaign for 2011

By ROSE RAGSDALE

For Mining News

Who says lightning can't strike twice in the same place?

In just 32 days last summer, Atac Resources Ltd. rocketed from near-oblivion to ignite what is rapidly becoming the second modern exploration rush to Yukon Territory in recent years.

Atac had explored a small area in the western portion of its Rackla Gold (formerly Rau) Project in east-central Yukon for several years. After making an impressive gold discovery in 2008, the company has drilled about 26,000 meters in 132 holes through 2010 in the Tiger Zone. As recently as Dec. 15, Atac reported strong drill results, hitting 32.64 meters averaging 8.91 grams per



GRAHAM DOWNS

metric ton gold in the latest round.

Last summer, the junior ventured nearly 160 kilometers, or 100 miles, to the east and stumbled upon new gold showings at the other end of the property.

The new discoveries occurred just two weeks after Atac reported identifying the Ocelot target, another significant style of mineralization located on both sides of the Rau Trend in the west. Seven surface samples in the Ocelot target assayed up to 2,810 g/t silver, 80.55 percent lead, 40.55



Members of Atac Resources Ltd.'s exploration crew canvass a mountainside at the Rackla Gold Project in Yukon Territory during 2010 summer field work.

percent zinc and 68.10 g/t indium.

Roughly the size of Long Island, N.Y. with 16,000 square kilometers and less than 10 percent of its surface area explored, the Rackla project is now known to host gold and other minerals in at least three different geological settings.

Creek ran blood red

Atac, which engages Archer Cathro & Associates (1981) Ltd. as its exploration contractor, acknowledges that the longtime Yukon consulting firm is playing an important role in its success at the Rackla project.

It was an Archer Cathro exploration geologist who followed up stream soil sediment samples showing elevated arsenic and gold levels and happened upon a dramatic surface showing in July.

"Some rocks on the banks caught my eye, so I chipped at them with my pick, and the stream literally ran red," said Archer Cathro President Bill Wengzynowski, describing the moment of discovery.

"For a second, I thought that I was bleeding," he quipped during a Yukon Geoscience Forum presentation in Whitehorse in November.

Wengzynowski had knocked loose a chunk of rock rich in orpiment and realgar, mineralization that tends to be "pomegranate red" in color, according to Atac CEO Graham Downs.

"In 2009, we did some silt sampling at the Sten claims (since renamed the Nadaleen Trend), and it was these samples that Bill was investigating," Downs told Mining News in a March 16 interview.

After the surface reconnaissance, Atac hustled to quickly import a drill rig to the area, and drilled just shy of 1,900 meters in nine holes in the mountainous terrain.

"We scrambled to get a couple of people there. We had no drill crews. We said, 'Just find a flat spot and drill,'" Downs recalled.

Within three weeks, Atac made four separate gold discoveries over an 8-square-kilometer area. Every hole drilled hit gold. Six holes hit the Osiris Showing, before the explorers stepped out 1 kilometer to the east and drilled a hole that hit the Conrad Showing. Another 400 meters farther east and they drilled the discovery hole for the Eaton Showing. The explorers also stepped some 900 meters to west of Osiris and drilled a hole that hit the Isis Showing.

"These were single holes over a very large distance, and we only built one drill pad," Downs said.

Atac reported the discovery of the four gold showings in mid-August just 32 days after Wengzynowski took his fateful hike up a stream on the Sten claims.

At Osiris, the junior reported 65.20 meters, averaging 4.65 grams per metric ton gold; at Conrad 21.13 meters at 8.03 g/t gold; at Eaton 9.64 meters at 3.36 g/t gold; and at Isis 17.00 meters at 0.92 g/t gold, along with several higher grade rock and soil samples.

More drilling in August and September produced results that confirmed the discoveries.

In October, the junior staked about

1,000 new claims encompassing 167 square kilometers, or nearly 65 square miles, to cover known pathfinder anomalies near the Osiris discovery. The new claims adjoin the eastern and northeastern edges of the company's existing claim block.

Discoveries spark another Yukon gold rush

News of the gold finds trickled out in late summer and soon touched off a wave of industry excitement not seen in the territory, arguably since the Klondike gold rush at the turn of the last century, or at least since the White Gold discovery in the Dawson Mining District to the west in 2008.

It's the rocks that set the latest discoveries apart.

Osiris and the other eastern showings are believed to be a part of a geological formation that mimics a gold-rich setting found in Nevada known as the "Carlin Trend." During the past 50 years, explorers have found numerous commercial gold deposits in the Carlin Trend, with the northern Carlin Trend area alone, yielding more than 96 million ounces of gold.

Carlin-type rocks were part of reefs that formed in the ocean millions of years ago where limestone broke off and tumbled forming debris flow breccias.

"This is the biggest gold sponge you could ever find, and they occur in massive structures. A lot of gold can go into these super sponges, and we've got 125 square kilometers (some 48 square miles) of this beach setting (on the Rackla property)," Downs said.

Downs said Atac's assessment of its latest discoveries as being Carlin-style mineralization was reinforced recently by the more than 100 industry professionals who stopped by the junior's exhibit at the 2011 Prospectors and Developers Association of Canada International Convention March 6-9.

"It felt good to have 100 or so people come by and not one of them argued or disputed that we had Carlin-type mineralization," Downs said. "They all said, 'Yep, you've got it.'"

Maurice Colpron, project geologist for the Yukon Geological Survey, said the Rackla Gold Belt is located at the northern edge of the Selwyn Basin between the regional-scale Dawson Thrust and Kathleen Lakes Fault.

"These are major fault structures that could have acted as conduits for bringing mineralization to the area, meaning there seems to be the proper plumbing system in the area" for these gold discoveries, said Colpron, who is preparing a bedrock map of the area for the Yukon Geological Survey.

The government geologist said recent staking activity in area around Atac's claims has resulted in the whole belt being staked.

"Atac had a quite a head-start there, and all of the ground around them has been staked," Colpron said March 20. "This area is just as busy as what was happening in the Dawson area last year."

Downs said he personally believes the Rackla Gold Belt is "a whole new gold district" because Atac found gold in the western quarter of the property and also gold showings some 100 kilometers, or 62 miles, away near its eastern edge.

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• NORTHWEST TERRITORIES

Prairie Creek inches toward production

Two decades after undertaking development of the NWT underground mine, tenacious Canadian Zinc may yet have a ways to go

By ROSE RAGSDALE
For Mining News

All bets are off, but prospects for the project most likely to succeed in becoming the next producing mine in Northwest Territories got a boost recently when its developer commissioned a new feasibility study.

Canadian Zinc Corp. in February reported engaging SNC-Lavalin Inc. to complete the feasibility study in 2011 for the underground Prairie Creek Project, a longstanding mining venture where it hopes to capitalize on several decades of development work to produce lead and zinc concentrates and a silver-bearing copper concentrate.

The project is located in an environmentally sensitive remote area in the Mackenzie Mountains of southwestern Northwest Territories, within the watershed of the South Nahanni River and in proximity to, but outside, the Nahanni National Park Reserve. The Government of Canada expanded the Nahanni National Park Reserve in June 2009 to completely surround the Prairie Creek Mine, however federal officials have assured Canadian Zinc of its third-party rights to operate and access the Prairie Creek Mine. The mine is also located in an area which is claimed by the DehCho First Nations as their traditional territory. No land claim settlement agreement has been reached between Canada and the DehCho.

Mineralization was discovered in Prairie Creek in 1928, but the property attracted



CANADIAN ZINC CORP.

Construction of the Prairie Creek Mine was nearly finished three decades ago when the base and precious metals project was placed in receivership after silver prices declined. Canadian Zinc Corp. has spent the past 20 years trying to bring into production the 600-1,200 metric-ton-per-day underground mining operation in southwestern Northwest Territories.

only limited exploration until 1966. The Prairie Creek mineral deposit hosts nearly 6 million metric tons of measured and indicated resources grading 10.71 percent zinc, 9.90 percent lead, 0.326 percent copper and 161.12 grams per metric ton silver, along with 5.54Mt inferred resources grading 13.53 percent zinc, 11.43 percent lead, 0.514 percent copper and 215 g/t silver and additional exploration potential, according to a 2007 independent estimate which is the

most recent available.

Unique opportunity

The Prairie Creek Mine project is considered unique because its environmental footprint is virtually complete. The project came within three months of production startup in 1982 before silver prices declined and the original developer, Cadillac Explorations Ltd., was placed into receivership after a spending a total of C\$64 million

on the project.

Since then, improvements proposed for specific site facilities have been aimed at further mitigating any potential impact the project may have on the environment. For example, filtered mill tailings will be disposed as underground backfill instead of on the surface.

The mine, mill and camp was issued a land use permit in 1980 and subsequently a water license in 1982.

Much of the mine site's current infrastructure, which includes a nearly complete 1,000-metric-tons-per-day mill concentrator, a two-story administration building, workshops, three levels of underground development, accommodations and fuel storage facilities, was held in care and maintenance until 1990.

In 1991, Canadian Zinc (then San Andreas Resources Corp.) negotiated an option to acquire an interest in the Prairie Creek property, and 20 years later, the would-be mine developer may be finally closing in on first production.

Canadian Zinc said existing infrastructure at the mine site is an important aspect of the project and, while requiring some upgrades, it will substantially reduce what would otherwise be the capital cost of putting the deposit into production. Planned new facilities will include a kitchen/accommodation block, concentrate shed, fuel-efficient low-emission power generation units, and an incinerator.

The company holds a water license and a

see PRAIRIE CREEK page 23

continued from page 14

RACKLA PROJECT

The Nadaleen Trend appears to host the first Carlin-type mineralization found in Canada. This development seems to have captured the mining industry's imagination along with a steadily flow of working capital for Atac from investors. Most recently, the junior raised C\$25 million in a private placement in February, bringing to about C\$50 million the working capital available for the 2011 exploration campaign.

Atac is a widely held company. Its largest shareholder with a 10.2 percent ownership interest is Strategic Metals Ltd., a sister company that specializes in generating mining exploration projects. Atac's management also holds a 6.3 percent interest, while the balance of the junior's 100 million fully diluted capital shares are held by institutions and individuals.

With no majors among its significant shareholders, Atac may be poised to become the perfect takeover target, or not. Downs declined to even indicate whether any of the majors have approached the company.

"I'll let you use your imagination," he told Mining News.

Aggressive exploration on tap for 2011

For the 2011 field season, Atac has hired eight drills to complete an aggressive 40,000-meter drill program in 200 to 250 holes – 30,000 meters in the Nadaleen Trend and 10,000 meters in the Rau Trend. Budgeting C\$20 million for the exploration campaign, the company engaged additional drills on a standby basis.

Atac is planning to build two additional air strips, one near the Tiger zone and another near Osiris likely on a natural

bench in one of the valleys, to cut costs by flying equipment and supplies directly to the exploration sites from Whitehorse, rather than trying to ferry them across the mountains from a central location.

The junior also plans to complete an NI 43-101 resource estimated for the Tiger zone in the third quarter and is considering mining that deposit from the air, instead of building a access road.

"We're actually going to put some thought into it," Downs said. "We will step back and learn more before we make any big decisions. If we keep finding mineralization out at the Osiris area, what's going to happen? I don't know."

Good, but how good

Since finishing the 2010 field program last fall, Atac's exploration team has worked to understand the implications of the new Rackla discoveries.

One difference between Atac's discoveries and the Carlin Trend is that the prolific Nevada gold deposits are deep mineralization, while the Nadaleen Trend, at this point, appears to be near the surface.

But with less than 10 percent of the property explored, the junior believes it is too early to know much.

"One thing we've asked is what if we find something bigger," Down said.

"What if we find something in the middle?" he asked, referring to the vast unexplored area between the Tiger Zone and the Carlin-style discoveries.

Though no one knows if Atac will identify more significant mineral deposits on the huge property, Downs said the "smart money understands how rare" the Carlin-style mineralization is.

"We know it's good, but we just don't know how good it is," he added. ●



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• ALASKA

A mining renaissance glimmers in Alaska

While state welcomes a new mine in 2010, a bevy of mineral projects are positioned to join Alaska's six producers in coming decade

By SHANE LASLEY

Mining News

Will the next decade usher in a mining renaissance in Alaska? With six operating mines producing some US\$3 billion worth of minerals in 2010 and another 10 projects positioning themselves to join the ranks, mining in the Far North state is beginning to show a glimmer of its former glory.

A century ago dozens of mines were operating across the Last Frontier, including world-class operations such as Treadwell, the largest gold mine of its time, and Kennecott, considered to be the richest known concentration of copper in the world. By the beginning of World War II, large-scale mines had vanished from Alaska's landscape.

This tumultuous time also can be considered the beginning of the modern era of mining in Alaska.

In 1943 Italian immigrant Emil Usibelli began supplying coal to the strategic Ladd Army Air Field (now Fort Wainwright) near Fairbanks. Equipped with a small dozer and a converted logging truck, the Italian immigrant and his partner fulfilled a 10,000-ton coal contract, marking the debut of Usibelli Coal Mine Inc., a family-owned company that now produces upwards of 2 million tons of coal annually.

Today, with the addition in 2010 of the Kensington gold mine near Juneau, Alaska boasts six major mines. These operations produced more than 600,000 tons of zinc, around 900,000 ounces of gold, some 14 million ounces of silver, 135,000 tons of lead and 2 million tons of coal in 2010.

"We have six major producing mines, three major development projects, three advanced exploration projects and somewhere around 60 significant exploration projects with about 24 of those spending a million dol-

lars or more in 2010," Alaska Division of Geological & Geographical Surveys Senior Minerals Geologist Dave Szumigala explains.

Zinc, which makes up about 40 percent of Alaska's annual production in terms of value, is currently the dominant mineral produced in the state. A position the industrial metal will likely relinquish if any of Alaska's massive gold projects come online in the next decade.

With the advent of Pebble, Alaska also would emerge as a major producer of copper, a metal not currently mined in the state.

Alaska has two fully permitted smaller scale gold projects, a 25-million-ton-per-year coal project seeking its permits and seven projects with the potential to contribute to a mining renaissance in the Last Frontier.

Here is a look at Alaska's producing mines and the advanced exploration projects eyeing production in the coming decade. ●

THE 2011 OUTLOOK

Bokan Mountain Rare Earth Element Project

OPERATOR: Ucore Rare Metals Inc.

LOCATION: Prince of Wales Island in Southeast Alaska

RESERVES: Bokan Mountain hosts an inferred mineral resource of 3.7 million metric tons grading 0.75 percent total rare earth oxides (TREO), with 39 percent of the TREO being the higher value heavy rare earth oxides (HREO). This comes to about 27,420 metric tons TREO, and about 10,584 metric tons HREO.

JOBS: Not yet determined

NOTEWORTHY: The swift development of Bokan Mountain is increasingly being seen as vital to securing a domestic supply of dysprosium, terbium and other heavy rare earth elements critical to national defense and green technologies in the United States. The project is getting support both in Washington D.C. and Juneau.

U.S. Sen. Lisa Murkowski, R-Alaska, introduced the Rare Earth Supply Technology and Resources Transformation Act, or "Restart" Act, in the Senate last June. Her bill calls for loan guarantees to stimulate U.S. REE mining and manufacturing as well as expediting review and approval of permits for rare earth exploration and development. Lawmakers in Juneau also have voiced support for expediting permitting and production of REEs in Alaska. Gov. Sean Parnell also has voiced his support for development of Bokan Mountain and has taken steps to get the project recognized.

"The Bokan Mountain site is one of the largest known REE deposits in North America and has significant deposits of the highly valued 'heavy' REEs such as dysprosium," Gov. Parnell wrote in a Feb. 22 letter to President Barack Obama.

IN THE WORKS FOR 2011 AND BEYOND:

Ucore released a resource estimate for Bokan Mountain in early March and hopes to complete a prefeasibility study by the end of 2011. In addition to building a mine, Ucore is investigating the viability of developing a metallurgical refining complex to capture the value-added segment of the rare-earth processing chain. The location of this facility has yet to be determined. Alaska Department of Natural Resources Deputy Commissioner Ed Fogels said the state is investigating whether there are any state lands nearby that might be suitable for such a facility.

Due to the strategic importance of the minerals at Bokan Mountain, it is possible this deposit could be developed within 10 years.

Chuitna Coal Project

OPERATOR: PacRim Coal LP

LOCATION: Beluga Coal Field, about 45 miles west of

PRODUCING MINES

Usibelli Coal Mine Healy
Greens Creek Silver Mine
Red Dog Mine
Fort Knox Gold Mine
Pogo Gold Mine
Kensington Gold Mine

DEVELOPMENT PROJECTS

Rock Creek Gold Mine
Nixon Fork Gold Mine
Chuitna Coal Project

ADVANCED EXPLORATION

Wishbone Hill Coal Project

Livengood Gold Project

Donlin Creek Project

Pebble Project

Lik Zinc Project

Bokan Mountain REE

Niblack Project



Drilling at Donlin Creek has outlined 33.6 million ounces of proven and probable reserves, plus 8.7M oz gold in the resource category.

Anchorage

RESERVES: 300 million tons of ultra-low-sulfur, sub-bituminous coal.

JOBS: 350 to 400 workers.

NOTEWORTHY: Chuitna was originally evaluated through an environmental impact statement and nearly permitted in the 1990s, but a coal mine was never developed. With the increased demand and price of steam coal, PacRim has put the project back on the regulatory track. Over the past two years, the Chuitna developer has made several modifications to the project design aimed at reducing the environmental impact of the proposed mine.

COMMERCIAL LIFE OF DEPOSIT: The current project predicts a minimum 25-year mine life with a production rate of around 12 million tons a year.

IN THE WORKS FOR 2011 AND BEYOND:

Due to these design alterations as well as changes in coal regulations, the U.S. Environmental Protection Agency is requiring that PacRim complete a supplemental Environmental Impact Statement for Chuitna.

PacRim has filed the SEIS applications, and the company is now working on updating the individual permit applications to reflect the redesigned project. The SEIS and permitting process for the coal project is expected to take at least 18 to 24 months, if the permits are approved by state and federal agencies, the company will evaluate market conditions and make a decision whether to proceed with development.

Donlin Creek

OPERATOR: Donlin Creek LLC

WORKING INTEREST OWNERS: NovaGold Resources Inc. 50 percent, Barrick Gold Corp. 50 percent

LOCATION: Kuskokwim region of western Alaska

CAPITAL EXPENDITURE: According to a 2009 feasibility study, construction of the mine and related infrastructure is estimated to be US\$4.84 billion.

NOTEWORTHY: Donlin Creek LLC is currently updating its 2009 feasibility study for the project to include a 320-mile natural gas pipeline to run from the west

side of Cook Inlet to Donlin Creek The natural gas would replace the diesel and wind originally envisioned to generate the 127 megawatts of electricity needed to power the mine.

RESERVES: 33.6 million ounces of proven and probable reserves at Donlin Creek grading about 2.23 grams gold per metric ton. Additionally, the gold deposit contains 4.3M oz measured and indicated resources and 4.4M oz of inferred resources.

Jobs: An estimated 1,000 jobs during a three-year construction period, about 600 jobs during operations.

COMMERCIAL LIFE OF DEPOSIT: The 53,500-metric-ton-per-day mine proposed in the feasibility study is expected to produce about 1.6M ounces-per-year gold over its first five years of operation. Based on current reserves, the mine should produce about 26.2M oz gold, or an average of about 1.25M oz/yr, over a 21-year mine life.

IN THE WORKS FOR 2011 AND BEYOND:

Donlin Creek LLC has budgeted US\$41 million for the 2011 work program, which will focus on completing a revision to a feasibility study that incorporates the natural gas pipeline and preparing permit applications for the project. The feasibility revision, scheduled to be completed in the second half of 2011, will provide operating costs using natural gas rather than diesel as the primary power source for the project, and also will use more recent gold prices and capital inputs to provide updated capital and cash flow estimates. Dependent on the outcome of the study, the company will decide whether to use natural gas to power the mine or to employ diesel-wind cogeneration as envisioned in the 2009 feasibility study. Either way, it is expected that NovaGold and Barrick will proceed with permitting by early 2012.

Fort Knox Gold Mine

OPERATOR: Kinross Gold Corp.

LOCATION: 26 miles north of Fairbanks.

RESERVES: 3.6 million ounces of gold.

JOBS: More than 500.

NOTEWORTHY: On Jan. 23, Fort Knox employees logged more than 4 million man-hours without a lost-time incident. This follows the Dec. 28 milestone of four years running without a lost-time incident at the gold mine.

Benefitting from the first full year of operating the Walter Creek Heap Leach Facility, the mine produced a record 349,729 oz gold in 2010, pushing the total to more than 4.5 million oz since commercial production began at Fort Knox in 1997.

The company anticipates gold production in 2011 to top 360,000 oz.

COMMERCIAL LIFE OF DEPOSIT: In 2009 Kinross completed construction of a heap leach facility and expansion of the current mine through exploration. The company currently projects that it has enough ore in reserves to feed the mill through 2018 and continue heap leach operations through 2021.

IN THE WORKS FOR 2011 AND BEYOND:

Kinross continues to seek new ore in the immediate Fort Knox area with the goal of expanding the existing pit or lead to development of another operation. An US\$8 million exploration program slated for Fort Knox in 2011 will focus on Gilmore Dome and the nearby Gil property.

Exploration at Gilmore Dome, a prospect directly south of the current mine, will involve a geochemical survey followed with a drill program.

Exploration at Gil, a project Kinross holds an 80 percent joint venture interest in, will start of with geophysical and geochemical surveys to be followed up with a drilling. The goal of the drilling program is to expand the strike length of known mineralization and test new targets.

An eight-mile, or 13-kilometer, road connects the Fort Knox and Gil properties.

Greens Creek Silver Mine

OPERATOR: Hecla Mining Co.

LOCATION: Near Juneau

RESERVES: 90.7 million ounces silver, 757,000 oz gold, 813,000 tons zinc and 428,200 tons lead.

JOBS: Around 300 workers.

NOTEWORTHY: In 2010 Greens Creek produced 7.2M oz of silver at a negative cash cost of US\$3.90 cents after credits for gold, lead and zinc.

COMMERCIAL LIFE OF DEPOSIT: The 8.4Mt of ore cur-



SUMITOMO METAL MINING POGO LLC

The Pogo gold mine – owned by a partnership between Japanese firms Sumitomo Metal Mining Co. Ltd. (85 percent) and Sumitomo Corp. (15 percent) – produced an estimate 385,000 ounces of gold in 2010.

rently in reserves is enough to last about 10 years.

The mine opened more than 20 years ago with 2.9Mt of reserves and has continued to replenish and add to its reserves through exploration.

IN THE WORKS FOR 2011 AND BEYOND:

Hecla said it is working to optimize mill capacity at Greens Creek and has successfully increased throughput by about 10 percent since 2008 to 2,200 tons per day, and will work towards increasing throughput to 2,250 tpd in 2011.

The company is also undertaking an aggressive exploration campaign. In addition to expanding orebodies currently being mined, Hecla is defining a nearby area known as the North East contact. This target represents a new prospective ore-body near the current mine that appears to be similar in size to the adjacent Greens Creek deposit that the company has been mining for the past two decades. Exploration expenditures at Greens Creek in 2011 are expected to exceed US\$8 million. Two drills are expected to work underground all year and the surface exploration program has three drills and a number of surface mapping and sampling crews in the spring and summer.

Kensington Gold Mine

OPERATOR: Coeur d'Alene Mines Corp.

LOCATION: 45 miles northwest of Juneau

RESERVES: About 1.4 million ounces of proven and probable gold reserves.

JOBS: About 200 workers.

NOTEWORTHY: Kensington became Alaska's sixth major mine when it began operations on July 3. Alaska's newest mine produced a total of 43,143 ounces in 2010. The fourth-quarter production of 27,988 oz is an 85 percent increase from the 15,155 oz produced during the first three months of operation. Coeur anticipates Kensington gold production to average 125,000 oz/yr.

COMMERCIAL LIFE OF DEPOSIT: About 11.5 years based on current reserves

IN THE WORKS FOR 2011 AND BEYOND:

Coeur d'Alene Mines is continuing to add to its reserves through exploration drilling. In addition to the 1.4 million oz reserves, the company has about 600,000 oz gold resources at Kensington. The company plans to upgrade these to reserves and discover new deposits to increase the life of the mine. One such target is the Raven Vein.

In 2010 Coeur completed about 6,100 meters of drilling on this prospective high-grade gold system, which represents the first drilling program conducted by the company on this prospective target. Follow-up drilling is planned for the Raven Vein in 2011.

Lik Zinc Project

OPERATOR: Zazu Metals Corp.

WORKING INTEREST OWNERS: Zazu Metals; 50 percent; Teck Resources Ltd. 50 percent (Zazu has the exclusive right to increase its stake in Lik to 80 percent by spending US\$25 million on the project by 2018.)

LOCATION: 14 miles northeast of Red Dog Mine in Northwest Alaska

RESERVES: Lik South – which is being considered in a current feasibility study – contains more than 3.3 billion pounds of zinc, more than 1 billion pounds of lead and more than 31 million ounces of silver. Lik North – a deeper deposit that could extend the mine life – contains an additional 1.3 billion pounds of zinc, 500 million pounds of lead and nearly 10 million ounces of silver.

Jobs: An estimated 300 jobs.

COMMERCIAL LIFE OF DEPOSIT: A preliminary economic assessment envisions a 5,500 ton-per-day mine and mill with an eight-year mine life. (By comparison, Red Dog processes about 9,800 tons per day.)

IN THE WORKS FOR 2011 AND BEYOND:

A prefeasibility study for the development of the Lik South deposit is currently underway and hammering out transportation infrastructure is a key component for completing the study.

The Alaska Industrial Development and Export Authority, which is considering financing infrastructure requirements, is completing its own due diligence on Lik South. AIDEA owns the Delong Mountain Transportation System, which is the haul road and port used by the Red Dog Mine. The transportation system is available to Zazu for the development of the Lik deposit and subsequent concentrate shipments. AIDEA, which determined that there is sufficient merit in developing the Lik deposit to warrant due diligence as a precursor to financing of new infrastructure and modifications to the Delong Mountain system, expects its review to be completed within six months. A 14-mile, or 23-kilometer, road linking Lik to the transportation system and additional concentrate storage at the port are among the upgrades that would need to be made.

In addition to continuing work on the Lik South feasibility study, Zazu is planning exploration drilling on the contiguous Lik North deposit in 2011.

Depending on the outcome of the prefeasibility study, Zazu could begin permitting development at Lik as early as 2012, which would put it on a timeline to begin production within 10 years. The company has not proposed a schedule for permitting or production.

Livengood Gold Project

OPERATOR: International Tower Hills Mines Ltd.

LOCATION: Adjacent to the Elliot Highway about 70 miles, or 110 kilometers, north of Fairbanks.

RESOURCES: 20.6 million ounces of gold. An updated estimate is expected by April.

COMMERCIAL LIFE OF DEPOSIT: A preliminary economic assessment completed in August envisions a heap leach pad and mill operation similar in scale to those at Kinross Gold Corp.'s Fort Knox Mine located about 60 miles to the southeast. Processing 81,000 metric-tons-per-day ore, this size operation would produce around 504,000 oz of gold annually over a 21-year mine life.

JOBS: Manpower needs are currently estimated to be 500 workers, but will depend on the final mine design.

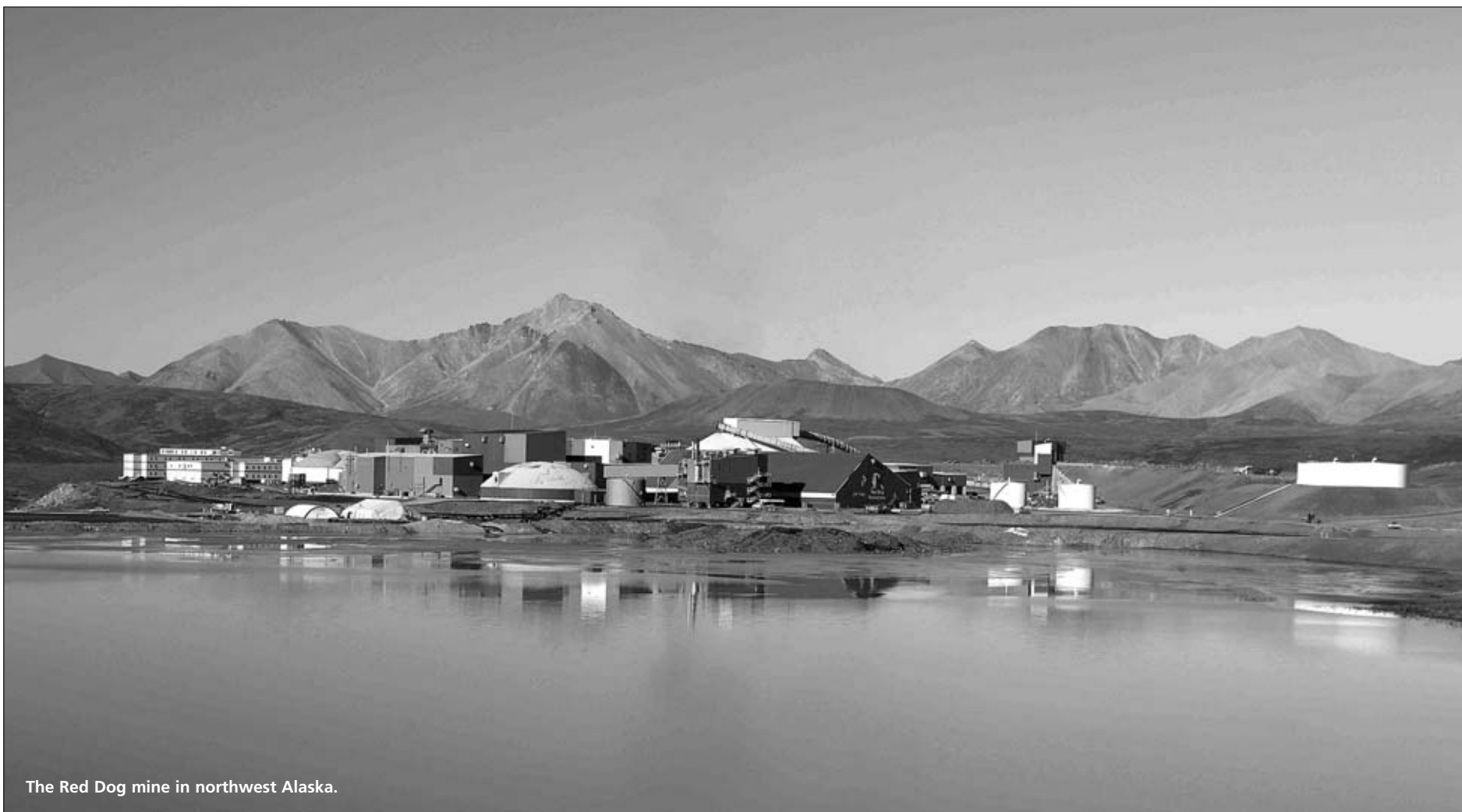
NOTEWORTHY:

M N O R T H O F ▲ 6 0 MINING

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NEWS

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The Red Dog mine in northwest Alaska.

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HEATHERDALE RESOURCES LTD.

Heatherdale Resources Ltd. has spent more than US\$15 million on exploration at Niblack over the past 18 months and plans to spend an additional US\$10 million by the end of 2011.

continued from page 17

MINING OUTLOOK

In 2010 the company commissioned preliminary economic assessments on two separate mining scenarios – a mill operation similar to Kinross Gold Corp.'s Fort Knox Mine and a heap leach-only operation. According to the economic assessments, building a Fort Knox-sized mine at Livengood would cost around US\$1.385 billion, with an additional US\$450 million in life-of-mine sustaining capital costs. Though the PEA demonstrates that a clone of the Fort Knox mill and heap leach operation at Livengood is economical, this will likely not be the operation that Tower Hill ultimately builds to mine the gold deposit.

The junior is considering a hybrid scenario for mining the nearly 20M oz gold estimated to exist in the Money Knob deposit at Livengood.

The emerging plan would be to develop the project in four stages. Starting with a 50,000 tpd oxide mill, projected to churn out some 500,000 oz gold annually, the company would then add a heap leach component and then bring online a second 50,000 tpd mill for processing sulfide ore. The final stage of the plan would be to up the sulfide milling capacity to 100,000 tpd by converting the oxide mill. The company estimates at peak performance the Livengood Mine would be producing some 800,000 oz gold per year for more than five years based on current resources.

IN THE WORKS FOR 2011 AND BEYOND:

International Tower Hill Mines budgeted C\$10 million for its 2011 exploration program at the Livengood gold project in Interior Alaska. This year's exploration, which began in February, includes about 45,000 meters of drilling to expand the current resource area, and 10,000 meters dedicated to seeking new deposits across the 145-square-kilometer, or 56-square-mile, Livengood property.

While resource expansion continues at Livengood, the company is working on two prefeasibility studies for the project. A prefeasibility study for a heap-leaching-only scenario is expected to be completed by mid-2011, and then immediately after that, the company aims to look at the mill operation. A prefeasibility study for that option is scheduled to be completed by year's end. Permitting is anticipated to begin as early as 2012. Depending on the mining scenario chosen, Tower Hill could begin construction in



SHANE LASLEY

International Tower Hill Mines plans to complete 45,000 meters of resource expansion drilling, and 10,000 meters dedicated to seeking new deposits at its Livengood gold project in Interior Alaska.

2015 and production could begin as early as 2017.

Niblack Project

OPERATOR: Heatherdale Resources Ltd.

WORKING INTEREST OWNERS: Heatherdale Resources Ltd.; 51 percent; Niblack Mineral Development Inc. 49 percent

LOCATION: Prince of Wales Island in Southeast Alaska.

RESOURCES: A resource calculated for Heatherdale in February estimates Niblack contains 161.5 million pounds of copper, 450,000 ounces of gold, 332.5M lbs zinc and 7.2M oz silver.

JOBS: Unclear at this time, but early indications are that the deposit would support an operation similar in scale to Hecla's Greens Creek Mine, which employs about 300 workers.

NOTEWORTHY: State of Alaska officials are investigating what synergies may exist between the Niblack project and Ucore Rare Metals Bokan Mountain proj-

ect about 15 miles to the north. Alaska Department of Natural Resources Deputy Commissioner Ed Fogels said the state is investigating whether there are any state lands nearby that could facilitate production facilities for the two projects.

Representatives from the Alaska Industrial Development and Export Authority also participated in the meetings. AIDEA could play a role in infrastructure development and financing.

IN THE WORKS FOR 2011 AND BEYOND:

Heatherdale Resources has spent more than US\$15 million on exploration at Niblack over the past 18 months and plans to spend an additional US\$10 million by the end of 2011. The company says it has defined mineral resources with sufficient volumes and grades, including a significant high-grade core, to initiate engineering and other technical studies towards the completion of a preliminary economic assessment for the project later in 2011 and a prefeasibility study as early as 2012.

Considering the current pace of advancements, the project could go into production within 10 years. Heatherdale has not proposed a timeline for permitting or production.

Nixon Fork Gold Mine

OPERATOR: Fire River Gold Corp.

LOCATION: 35 miles northeast of McGrath

RESERVES: 98,300 ounces of gold

JOBS: About 75

NOTEWORTHY: Nixon Fork is complete with a 150-metric-ton-per-day flotation plant with a gravity gold separation circuit, a sulfide flotation circuit and a brand-new carbon-in-leach circuit. The mine also boasts a fleet of mining vehicles, a power plant, maintenance facilities, an 85-person camp, office facilities, and a 1,500-meter-long airstrip. The developer also has obtained the bonds and permits needed to move the project quickly back into operation. Resource: Nixon Fork has an underground resource of just over 100,000 metric tons averaging 30.1 grams per metric ton, or nearly 1 ounce, gold.

Additionally, a historical tailings pond contains an indicated resource of 92,000t, averaging 7.9 g/t gold and an inferred resource of 48,000t at 7.4 g/t gold. Commercial life of deposit: According to a preliminary economic assessment completed in February, the current resource is sufficient to sustain a two-year production forecast at a rate of 150 tpd. Fire River

noted that mineral inventories in the report do not include the results of ongoing ore definition and exploration drilling.

IN THE WORKS FOR 2011 AND BEYOND:

Crews began mining fresh ore at Nixon Fork in March in anticipation of a June start-up of the mill. Fire River anticipates a three-month ramp-up period to full production.

Workers are also completing the construction of a 250 tpd carbon in leach circuit to be added to the gold recovery system at Nixon Fork. In addition to increasing gold recoveries of mined ore from 80 percent to about 96 percent, the 100 tpd excess capacity of the CIL circuit will be used to reprocess tailings from historical mining.

Fire River forecasts annual gold production to be around 50,000 oz.

Pebble Copper-Gold-Molybdenum Project

OPERATOR: Pebble Limited Partnership

WORKING INTEREST OWNERS: Anglo American plc; 50 percent; Northern Dynasty Minerals Ltd. 50 percent
Location: Near Iliamna in the Bristol Bay region of Southwest Alaska.

CAPITAL EXPENDITURE: Around US\$500 million through the end of 2010.

DEVELOPMENT COSTS: An estimated US\$4.7 billion for the mine, plus US\$1.3 billion for infrastructure.

RESERVES: 80.6 billion pounds copper, 107.4 million ounces gold and 5.6 billion lbs molybdenum. Additionally, the deposit contains rhenium, palladium and several million ounces of silver.

JOBS: 2,080 workers over a four-year construction period and an operations work force projected at 1,020.

NOTEWORTHY: Based on a preliminary assessment prepared for Northern Dynasty, over 45 years the deposit could produce 31 billion lbs copper, 30M oz gold, 1.4 billion lbs molybdenum, 140M oz silver, 1.2M kilograms (2.6M lbs) rhenium and 907,000 oz palladium, while mining only 32 percent of the total Pebble mineral resource.

COMMERCIAL LIFE OF DEPOSIT: Assuming the total resource was mined, at the production rate of around 220,000 metric tons per day presumed in the Northern Dynasty study, it would take about 135 years to mine the deposit.

IN THE WORKS FOR 2011 AND BEYOND:

The Pebble Partnership is continuing work on an environmental baseline document and feasibility study.

The environmental baseline document will be a compilation of more than US\$120 million worth of environmental studies completed in the Pebble region since 2004. Expected to be completed early in 2011, the document is expected to be around 6,000 pages. A 150-page technical summary and 30-some page popular summary also will be available.

Due to the complexities of the project, the Pebble Partnership is reluctant to provide a timeline for the completion of the mine-plan and feasibility study



SHANE LASLEY

Drilling at the Pebble project has outlined 80.6 billion pounds copper, 107.4 million ounces gold and 5.6 billion lbs molybdenum. Additionally, the deposit contains rhenium, palladium and several million oz silver.

currently underway for the project. Once completed, the company will present the mine-plan to regional stakeholders before submitting permit applications. The permitting process is expected to take three to four years, and the Pebble Partnership anticipates that subsequent litigation will delay development.

Pogo Gold Mine

OPERATOR: Sumitomo Metal Mining Pogo LLC

WORKING INTEREST OWNERS: Sumitomo Metal Mining Co. Ltd. 85 percent; Sumitomo Corp. 15 percent

LOCATION: 110 miles southeast of Fairbanks.

JOBS: 328 workers

NOTEWORTHY: Pogo is the first overseas mine operated by Sumitomo Metal Mining, which has been a comprehensive nonferrous manufacturer since the 16th century. Part owner of the mine until recently, the 400-year-old business said acquisition of the remaining interest in Pogo was a significant step toward becoming a major force in the nonferrous metals industry worldwide.

COMMERCIAL LIFE OF DEPOSIT: 2017

IN THE WORKS FOR 2011 AND BEYOND:

Sumitomo Metal Mining Pogo completed some 40,000 meters of surface and underground drilling at Pogo in 2010. A 21,150-meter surface program split between helicopter-supported and road-based drill rigs investigated both expansion areas near the mine and the property-wide potential at Pogo. About 7,460 meters of the underground program was

exploration drilling and the remaining 12,200 meters was dedicated to reserve/resource definition. The Tokyo-based miner plans to continue extending the life of the mine through reserve expansion and seeking new ore-bodies across the company's extensive land package surrounding the mine.

Red Dog Mine

OPERATOR: Teck Resources Ltd.

WORKING INTEREST OWNERS: Teck Resources Ltd. 75 percent, NANA Regional Corp. Inc. 25 percent. NANA's stake increases by 5 percent every five years starting in 2007.

COMMERCIAL LIFE OF DEPOSIT: In 2010 Teck received permits needed to begin mining the Aqqaluk deposit, which will provide enough ore to keep Red Dog in operation until about 2031.

LOCATION: Northwest Alaska about 82 miles north of Kotzebue.

RESERVES: 51.6 million metric tons of reserves averaging 16.7 percent zinc and 4.4 percent lead.

Jobs: Red Dog provides 475 full-time jobs and about 80 temporary jobs annually. Nearly 58 percent of these positions are filled by NANA shareholders, many of whom have worked their way up to high-level positions at the mine.

NOTEWORTHY:

Red Dog produced around 538,000 tons of zinc, 110,000 tons of lead and 6 million ounces of silver in 2010.

From 1990-2008, Red Dog provided US\$1.3 billion in benefits, including wages to shareholders, joint venture contracts, payments in lieu of taxes and direct royalty payments to NANA. In 2009 alone, the mine provided US\$116 million in federal and states taxes and invested US\$217 million in the local and state economy through the purchase of goods and services from Alaska suppliers.

A total of US\$471 million in royalties has been paid to NANA since the agreement was signed in 1982, and due to provisions of the Alaska Native Claims Settlement Act, 60 percent of the royalties are shared with the 12 other Alaska Native regional corporations.

NANA's increased interest in Red Dog has helped boost income from the mine over recent years. From 2005 to 2009, the Native corporation received US\$373 million in royalty payments.

IN THE WORKS FOR 2011 AND BEYOND:

Teck's 2010 exploration in the Red Dog region focused on Anarraaq, a deep deposit that lies about seven miles northwest of the current operation. According to a 2004 report, Anarraaq hosts a 1-billion-metric-ton or so barite body and a zinc-lead-silver massive sulfide zone with an estimated resource of about 18 million tons at 18 percent zinc, 5.4 percent lead, and 85 grams per metric ton silver. The company completed a 17-hole drill program at



NOVAGOLD RESOURCES INC.

NovaGold Resources Inc. has put its Rock Creek gold mine up for sale. The company brought the 7,000-metric-ton-per-day mill at the project into brief operation in 2008, but financial and mechanical issues forced the mine to be shut down and placed on care and maintenance.

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MINING OUTLOOK

Anarraaq and nearby Antiguruk prospect in 2010. The company plans to resume its exploration of the deep deposit area upon the delivery of new drill rigs in 2011. Teck anticipates Red Dog will produce around 555,000 metric tons of zinc and 85,000 metric tons of lead in 2011.

Rock Creek Gold Mine

OPERATOR: NovaGold Resources Inc.
LOCATION: 8 kilometers, or 13 miles, from Nome in western Alaska
RESERVES: 320,000 ounces gold reserves and a 310,000-oz gold resource.
JOBS: About 150.
NOTEWORTHY: The mine began production in September 2008, but due to financial and mechanical issues, operations were suspended later that year, and the mine was placed in care and maintenance. NovaGold is currently seeking a buyer for the mine. The 7,000 metric-ton-per-day mill at Rock Creek was designed to produce about 100,000 ounces of gold annually at a cost of around US\$500 an ounce. Commercial life of deposit: About 6 years based on current reserves and resources.
IN THE WORKS FOR 2011 AND BEYOND: NovaGold has budgeted US\$8.5 million for care and maintenance activities at Rock Creek in 2011. The company said these costs may be reduced if the project is sold during the year. The company also will prepare a preliminary closure plan for the project in the event that the board chooses to close and reclaim the property rather than selling it to another operator.



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Usibelli coal mine is Alaska's longest lived large-scale mine. Founded in 1943 by Emil Usibelli, Usibelli Coal Mine Inc. started off supplying coal to the newly constructed Ladd Army Air Field (now Fort Wainwright). Today, the family-owned company supplies six power plants in Interior Alaska with about 1 million metric tons of coal per year and ships an additional 1 million metric tons overseas annually.

Usibelli Coal Mine - Healy Operations

OPERATOR: Usibelli Coal Mine Inc.
LOCATION: Near Healy
RESERVES: Surface mineable coal reserves to around 700 million tons
JOBS: About 100
NOTEWORTHY: Alaska's longest lived large-scale mine. The fourth-generation family-owned company, founded in 1943 by Emil Usibelli, started off supplying coal to the newly constructed Ladd Army Air Field (now Fort Wainwright). Today, Usibelli supplies six power plants in Interior Alaska with about 1 million metric tons of coal per year, and ships an additional 1 million metric tons overseas annually. Commercial life of deposit: At current production rates Healy has about 350 years of reserves.
IN THE WORKS FOR 2011 AND BEYOND: The Healy Clean Coal Project, sitting idle next to Usibelli's Healy operation, has the potential to provide 50 megawatts of power to the Alaska railbelt electrical grid, and has the best possibility to offer near-term expansion to Usibelli's domes-

tic market. Golden Valley Electric Association, an electric cooperative serving some 100,000 residents of Interior Alaska, is in the process of renewing the permit it needs to bring the Healy Clean Coal Project online. The Alaska Department of Environmental Conservation has approved the permit and the U.S. Environmental Protection Agency is in the process of reviewing it. Once the permit is approved, GVEA estimates it will take between 18 to 24 months to bring the plant online, depending upon legal challenges by environmental groups. Usibelli says it has maintained a long-term commitment to clean coal technology and is ready to provide coal to the facility whenever HCCP is returned to service. The company says it has the infrastructure in place to double production without significant capital investment, and it is positioned to supply both domestic and international markets in the foreseeable future.

Wishbone Hill Coal Project

OPERATOR: Usibelli Coal Mine Inc.
LOCATION: 10 miles, or 16 kilometers, northeast of Palmer.
RESERVES: 14M tons of bituminous coal.
JOBS: According to a socioeconomic impact study completed by the Institute of Social and Economic Research, the mine would provide around 90 jobs.
NOTEWORTHY: If Alaska-based Usibelli decides to develop Wishbone Hill, some 500,000 tpa of the cleaner-burning bituminous coal will likely be shipped to Japan via newly constructed loading facilities at Port MacKenzie on the west side of upper Cook Inlet directly across from Anchorage.
COMMERCIAL LIFE OF DEPOSIT: Based on the 6 million tons of coal reserves being considered in a feasibility study currently underway, Wishbone Hill would operate for about 12 years.
IN THE WORKS FOR 2011 AND BEYOND: Usibelli anticipates completing the feasibility study early in 2011 and depending on its results, could begin mining Wishbone Hill coal as early as 2012.

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PRAIRIE CREEK

land use permit for underground exploration and development and operation of a pilot plant, and land use permits for surface exploration. These permits were issued after environmental assessments were carried out by the Mackenzie Valley Environmental Impact Review Board. Through these assessments, the site and existing facilities have been extensively studied and reviewed, and relevant permits issued. A number of plans and structures have already been developed and been reviewed and approved by the Mackenzie Valley Land and Water Board. Those will form a major part of the proposed development, including mine water contingency and spill contingency plans, a certified tank farm and a polishing pond.

The company also holds permits for a winter road to access the mine site from the Liard Highway.

Prairie Creek's current estimated measured and indicated resources are capable of supporting a mine life of more than 14 years at an initial production rate of 600 tons per day, which would increase to 1,200 tpd. In addition, future inclusion of the inferred resources is expected to extend the mine's life to at least 20 years.

Canadian Zinc said about 220 permanent workers will be needed at the mine, half of whom would be on-site at any one time. Personnel will generally work a three weeks on, three weeks off schedule (with variations as required). Area nonresident personnel will be flown in on charter flights from regional centers, while local personnel will be flown in from the communities of Nahanni Butte, Fort Liard and Fort Simpson.

The company said it is targeting a 35 percent northern work force, with a minimum 15 percent of its employees being members of First Nations. It also plans to offer training programs to fill mine positions.

2010 activities

Work at the Prairie Creek mine site during the summer of 2010 included continuing care and maintenance, environmental monitoring programs, road construction and repair, and a diamond drill exploration program. Canadian Zinc spent a total of C\$4.2 million, compared with C\$2.3 million in 2009.

In 2,700 meters of deep drilling, the company also confirmed the presence of the host

Whittaker geological formation at the projected horizon, about 4 kilometers, or 2.5 miles, north of the Prairie Creek Mine portal, and the potential vein target that is projected to lie at a down-hole depth of about 1,500 meters.

Further repair work to the existing mine access road was completed, and a new 8-kilometer-, or 5-mile-, long access road to the new drill pad at Casket Creek was constructed.

In August a perimeter land survey was completed on the Gate mineral claims resulting in an adjusted total surface area for the new Gate mining leases of 2,776 hectares, or 6,860 acres. The Gate claims contain similar geology to that of the Prairie Creek mine and grassroots exploration developed new base metal targets, some of which still remain under-explored. The proximity of these claims to the Prairie Creek Mine, and the similarities in geology, justified upgrading the mineral tenure of these claims to long-term mining leases that expire in September 2030.

The Prairie Creek land package, including mining claims, mining leases and surface leases, now totals 8,218 hectares, or 20,299 acres.

Canadian Zinc also undertook the removal, by airlift, of all PCB (polychlorinated biphenyls) contaminated material that has been stored in a dedicated safe facility on site since 1982. This follows a similar program that removed all old cyanide from the site in 2008. The company contracted Hazco Environmental Services to repack, remove and transport the PCB material off-site to be disposed of, by incineration, at the certified Earth Tech Swan Hills disposal facilities in Northern Alberta.

Canadian Zinc also continued discussions and engagement with the local communities of Nahanni Butte Dene Band and Liidlii Kue First Nation (Fort Simpson) with whom it has entered into a memoranda of understanding to establish mutually beneficial, cooperative and productive relationships. The company has agreed to use its best efforts to employ community members on a first preference basis and to assist the communities to benefit from business opportunities associated with the Prairie Creek Project.

On Jan. 20, Canadian Zinc signed the Nah'a Dehe Dene Prairie Creek Agreement, which provides for an ongoing working relationship between Canadian Zinc Corp. and the Nah'a Dehe Dene Band (Nahanni Butte Dene Band). The agreement provides a

framework such that training, employment and business contracts are made available to Nahanni to the mutual benefit of both parties.

Comprehensive technical studies

Over the years, a substantial amount of technical data has been accumulated on the project, dating back to the 1970s and the subsequent completion of the original Prairie Creek Definitive Feasibility Study by a former subsidiary of SNC-Lavalin in 1980. Numerous other technical and economic studies have been carried out since, while exploration of the property continued.

During the past two years, Vancouver-based SNC has assisted Canadian Zinc with various aspects of project planning and design as part of the ongoing environmental assessment process. SNC, which is celebrating 100 years in business in 2011, also has experience in designing and constructing other mine projects in the Far North: Rio Tinto and Harry Winston's Diavik diamond mine and Newmont Gold Corp.'s Hope Bay Davis North gold project (Nunavut).

The general scope of the feasibility study will include detailed engineering and design including mining equipment, on-site and off-site infrastructure, transportation and logistics, a construction schedule and execution plan and capital and operating cost estimates.

Key aspects of the mine's design will be integrated into the new feasibility study with the help of subcontractors, including: DRA Americas – DMS (Dense Media Separation) plant design; Mine Paste Engineering Ltd. – paste plant design; Golder & Associates – site facilities and water treatment design; and SGS Lakefield Research Ltd. – metallurgy and processing.

More permitting ahead

The project is currently in the advanced stages of environmental assessment by the environmental review board. It is expected that public hearings will be held in April or

May and that the EA process for the Prairie Creek Mine will be completed in mid-2011.

A further regulatory stage managed by the territory's land and water board (with input from territorial and federal agencies) will follow the EA before permits are issued. These permits will likely include conditions recommended as a result of the EA, the company said.

With the environmental assessment nearing completion, Canadian Zinc said major operational parameters that will factor into the project's implementation are now being determined and now is the time to evaluate the project's capital costs and financial analysis through the completion of the feasibility study, in anticipation of arranging construction and working capital financing.

The company also told federal securities regulators in a March 16 filing that since 2001, it has successfully obtained seven permits for the exploration and development of the Prairie Creek property from the territory's land and water board, including two type "B" water licenses, four land use permits for exploration activities and underground development and a winter road permit. In addition, various aspects of the Prairie Creek project have been the subject of five previous EAs carried out by environmental review board, all of which resulted in recommendations that the relevant project be allowed to proceed.

Although it has experienced long delays in obtaining permits, and expects a continued lengthy process with its permitting activities, Canadian Zinc said it has, to date, successfully carried out extensive programs at Prairie Creek, in accordance with all regulatory requirements and in compliance with all permits and licenses.

"Given the open-ended nature of the Mackenzie Valley permitting process, and the company's experience to date, it is likely that the environmental assessment process will extend for a considerable time," the company added. ●



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