



# PROSPECTOR

RESOURCE INVESTMENT NEWS

MARCH, 2022

## “OLD ENERGY’S” 2022 SURGE: HOW DURABLE IS THIS MOVE?

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### ABORIGINAL MINER

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While our passion for mineral exploration and mining has not changed, some things in the world most certainly have—including the dates and appearance of the PDAC Convention, which is celebrating its 90th anniversary in 2022.

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# "OLD ENERGY'S" 2022 SURGE: HOW DURABLE IS THIS MOVE?

By Chris Temple

**T**hrough last month's official numbers we have seen additional fresh, 40-year high blowout statistics on inflation:

- A 7.5% rolling year-over-year CPI (Consumer Price Index),
- Thanks to double the expected latest monthly PPI (Producer Price Index) reading, a 9.7% year-over-year surge for that measure and
- Last but not least, a double-digit reading--10.8% year-over-year through January—on import prices.

Joe's administration—led by Treasury Secretary Janet Yellen—has made it fashionable to "disinvest" from fossil fuel industries.

Now, on top of it all, we have Russia's invasion of Ukraine. That has raised further questions about supplies, and emboldened directional traders to really pile into crude oil bets.

Prior to Russia's move, the price of oil seemed inexorably headed to—and eventually through—the \$100/barrel level. On top of a growing structural supply deficit, we had Fed Chairman

And that will—again—be at least partly *if not chiefly* due to "Joliet Jay." In his semiannual congressional testimony March 2-3, Powell intimated that the conflict in Ukraine might give the Fed some pause to take away "accommodation" on monetary policy as quickly as it might have otherwise.

And that, in turn—all else being equal—means that the increasing prices for oil, other commodities, etc. will be WORSE STILL before they have any chance to get better (**NOTE:** For a *much* deeper dive into the reasons for that and a LOT more about Ukraine's back story, commodities, Fed policy and the rest, listen to <https://anchor.fm/mining-stock-daily/episodes/Chris-Temple-Discusses-Ukraine-Commodity-Crunches-and-Interest-Rates-e1f6v15>, my latest discussion with our colleague Trevor Hall at *Mining Stock Daily*.)

In short, Powell will continue to repeat in spades the major policy error of Fed Chairman Arthur Burns back in the 1970's, who accommodated via too-cheap money and thus made worse the Arab oil embargo back then. But here again, Powell will shirk the blame for this that is primarily his own; after all, it is Vlad the Bad who is now to blame for everything from inflation...to energy crises...to the common cold and "the Heartbreak of Psoriasis" (I suspect some of you are old enough, like me, to remember that latter iconic commercial!)

At times like this it is important to ascertain How much of such an outsized move as we've seen in oil especially is structural/fundamental... and how much is "hot money" that could leave just as quickly if one or more reasons emerged for it to do so.

**Underneath this all is the intractable, fundamental FACT alluded to above that the tight supply of oil worldwide—and**



Aside from labor costs, there is no bigger component of our recent 70's-style inflation than energy prices. Already, crude oil especially was surging in 2022 due to demand recently recovering faster than supply as the world leaves Plannademic mode. Complicating that as well is the part-inept, part-insane Biden energy policy. In addition to hampering production of all kinds of energy and even green energy inputs, Sleepy

Jerome Powell's continued uber-inflationary monetary policy goosing most everything higher.

**Now, boosted by war and associated supply fears, oil's move has gone parabolic.** In the week ended March 4 as this is written, West Texas Intermediate crude oil has surged to over \$115/barrel; and will undoubtedly continue higher until something substantially changes.

## U.S. crude oil stocks

million barrels



Source: U.S. Energy Information Administration

**acutely here in the U.S.—is the result of poor planning and self-inflicted idiocy.**

As you see in the nearby chart from the I.E.A., supplies in the U.S. remain just below the bottom of their usual range.

On the “idiocy” front—from canceling the Keystone XL Pipeline his first day in office, to giving room for others in his *disastrous* circle to hamstringing the fossil

fuel industries as much as they can get away with—Biden’s Administration has that much more hurt the supply picture. And this is just as 1. More activity is getting back to normal as the Plannedemic fades, 2. Demand will *further* increase as winter gives way to spring and summer and, now, 3. We have the Russian move on Ukraine.



In the end, any exacerbated spike in oil beyond even this will carry within it the seeds of its own end at some point. As in previous, similar episodes, the old saw “high prices cure high prices” will kick in at the least; and economic activity of all kinds will be curtailed. At the extreme, we could have a repeat of what we did back in 2008: back then, oil plunged from a high above \$140/barrel as the commodity boom was nearing its end to below \$40/barrel *within a matter of months*.

That is less likely (though possible) this time around; primarily because the Fed is not going to be nearly as aggressive in belatedly trying to put the Inflation Genie back in the bottle as was Fed Chairman Alan Greenspan ahead of the 2008 bust. Helping things near-term as well to be at least less bad will be China (which is aggressively easing

# Equity Metals Corporation

TSX.V: EQTY | OTCQB: EQMEF | FSE - EGSD

## SILVER QUEEN GOLD-SILVER PROJECT BRITISH COLUMBIA, CANADA

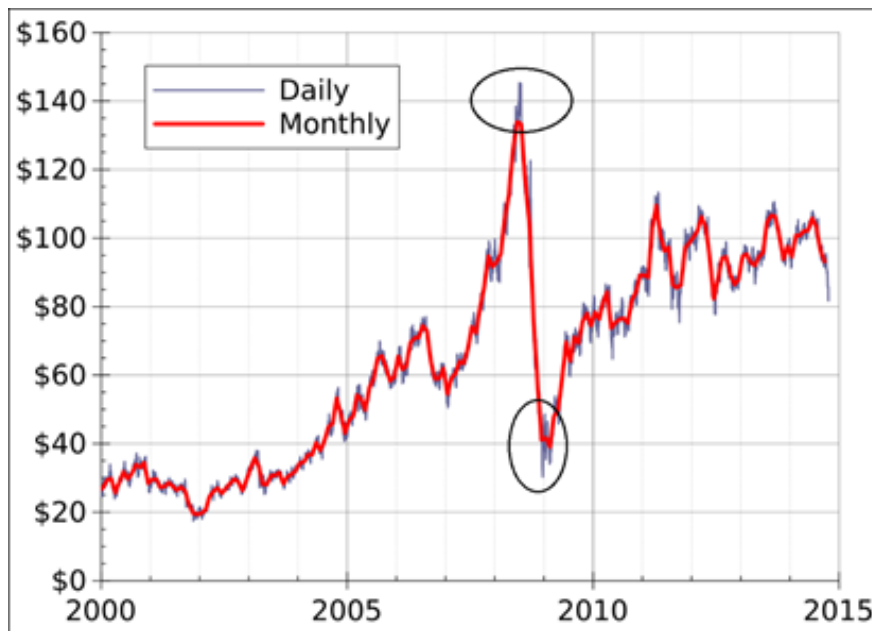
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- Significant existing historical underground development resulting in:
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  - Reduced costs for such feasibility work and downstream mining scenarios
- Major & Mid-tier miners nearby, potential JV or acquisition
- A total of 76 drill holes for 24,027metres in six successive phases of exploration drilling starting in late 2022
- Maiden resource on the Camp Vein target expected in Q2 of 2022.

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monetary policy) and Iran (whose added 1.5 million barrels of daily production beyond current levels may soon be in play again if a deal is reached on their nuclear program.)

These will probably provide but fleeting relief, though. Goldman Sachs' chief commodity guru Jeff Currie has been saying that *even if* all is patched over with Iran, the development would cause little more than a "speed bump" for oil on its way to higher prices still.

**More incredibly, in some ways, is the story these days of natural gas.** It wasn't all that long ago that producers in some areas (chiefly the Northeast U.S.) literally couldn't give the stuff away; this is one reason you will often hear of gas being simply burned off well heads into the atmosphere, as producers bother only with crude oil and some NGL's (natural gas liquids) they produce.

But here too, we went so long early on in the Plannedemic with drastically constrained production that recent levels have simply not kept up with demand that well.

I do believe that—as with so many other things—we are going to settle in at a substantially higher threshold price for natural gas going forward. (Usually) weather-related volatility will remain as we saw recently with a couple different spikes up near the \$6.00/mcf level. But I do not see an equation ahead that will bring gas down to \$2.00/mcf...or less...again any time soon.

The U.S. and Canada uniquely here will benefit via their relatively plentiful and cheaper natural gas supplies. The U.S. specifically has become the world's largest LNG exporter (at least until LNG Canada—that country's single-largest ever economic and export project—is up and running a few years hence.) This benefits investors in many companies; chief among them among my recommendations in *The National Investor* is Cheniere Energy Partners, L.P. (NYSE-CQP) which recently had a yield of close to 7% after announcing a substantial boost to its payout for 2022.

Long-term, the *global* demand for natural gas/LNG will keep the U.S. and Canada in a strong position. Whoever fills Europe's dwindling reserves back up, that's just a part of the story: natural gas will stay in very strong demand for years until—maybe—better policy makers who eventually replace the current idiots are in charge and finally put the pieces of a Greener economy into place properly. For some time to come we'll continue seeing this dynamic where still-cheap North American prices continue to be pulled up closer to European/Asian ones.

With or without any augmentation by the U.S. Deep State/Biden to further roil things in Europe, that will be the case. We just don't know yet whether the base price (without accounting for those occasional weather-related spikes and then temporary overshoots back down) will be closer to \$5.00/mcf...or \$8.00/mcf (the latter is a number I have read more than once lately that has some credibility; especially now with the Nord Stream 2 pipeline from Russia being put on ice.)

**I remain of a mind to keep incrementally adding exposure to "old energy" because the secular trend/ fundamentals of tight supplies against rapidly rebounding demand is so favorable.** Another "Cadillac" of a big oil and gas infrastructure company I recently added back is Enterprise Products Partners (NYSE-EPD), yielding close to 8%. It is a poster child for how undervalued the whole space *still is*,



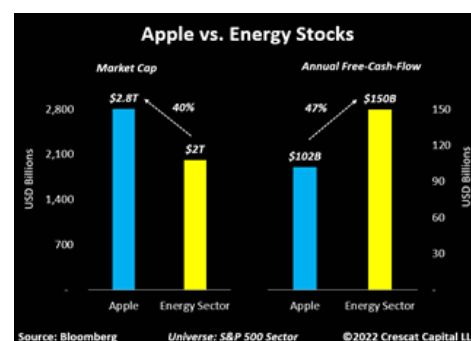


despite some nice moves over recent months. As you see in the nearby chart, its business remained strong enough during the punk times (until recently) for energy stocks that its distribution continued to rise steadily. *But even now, EPD shares remain well below their high of seven years ago!*

Energy stocks as *an entire sector* are likewise a poster child for the promise of the whole “repricing” theme on Wall Street I have been discussing for a while. As you see via the chart below (and Apple is by far a better relative “value” than most of the other big-cap tech stocks today) that company nevertheless is itself far more expensive relative to its cash flow *than the entire energy sector*.



And the cash flow for energy companies is accelerating profoundly to boot.



In summation, there are few better sectors to be in right now than energy; and investors who wisely pick their spots here are very likely to continue doing well even as the broad market (and especially the Nasdaq) continues to work its way *lower*. We'll need to be wary, though, if the recent added spike in the underlying commodity prices *really* gets out of control; that could hurt the equities anew in the end.



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# TELLURIUM – THE UNKNOWN METAL THAT IS ESSENTIAL FOR ENERGY AND TECHNOLOGY

By Christian Elferink

## WHAT IS TELLURIUM (TE)?

Tellurium is highly involved in the energy transition and is considered a technology-critical element. Tellurium is a naturally occurring element found in the earth's crust just like any other metals you might be more familiar with but is extremely rare. It is mainly used in the photovoltaic industry (The conversion of light into electricity) CadmiumTellurium (CdTe) thin film solar cells. These solar cells are being used increasingly by growing economies such as India and China and now account for 40% of the global Tellurium consumption. Other uses are in the thermoelectric industry, which accounts for about 30% of Tellurium consumption, through the production of BismuthTellurium (BiTe) semiconductors, in metallurgy (15%), and others including cleantech (15%). Tellurium can also be used as an

additive to steel and copper to improve machinability, making these metals easier to cut.

According to Technavio, who monitors the Tellurium market, the market will grow by 60m tonnes during 2020-24, a CAGR of about 3%. Allied Market Research valued its main end market, global solar energy, at US\$52.2bn in 2018, projecting it to reach US\$223.3bn by 2026, a CAGR of 20.5%. Who is going to supply this future demand?

### TELLURIUM EXPLORATION COMPANY

**First Tellurium Corp. (CSE: FTTEL)** is the only publicly listed junior miners that offers exposure to this metal. First Tellurium's unique business model is to generate revenue and value through mineral discovery, project development, project generation, and cooperative access to untapped mineral regions in Indigenous territory with sustainable exploration. The company proudly adheres to and

supports the principles and rights set out in the United Nations Declaration on the Rights of Indigenous Peoples and in particular the fundamental proposition of free, prior, and informed consent. First Tellurium owns two projects and has several partnerships of which one with the goal to develop next-generation lithiumtellurium (Li-Te) battery.

### KLONDIKE TELLURIUM PROPERTY

Klondike is a high-grade tellurium prospect held previously by First Solar, Inc., one of the world's largest solar panel producers. Due to the property's exceptional tellurium grades, Klondike was considered one of First Solar's top tellurium prospects worldwide. First Tellurium has the option to acquire 100% of the property.

#### Key Project Attributes:

- Underexplored prospect with up to 33,300 ppm (3.33%) tellurium, 33.7 g/t gold, and 364.8 g/t silver in surface and mine dump samples.
- Strong 650 x 100 m geophysical anomaly identified in 2011, indicating an attractive target at shallow depths.
- Mineralization hosted by two or more silicified pipes characterized by native gold and tellurium, and silver + base metal tellurides.
- 2 x 1 km envelope of strong hydrothermal alteration in Tertiary volcanic rocks.
- The property has generated interest from mid-majors. Exploration performed by Placer Dome from 1988 to 1990.
- "If this property were in Nevada, there would be 100 holes in it by now" – Sunshine Mining Co., 1988 internal memo.

### DEER HORN PROJECT

The Deer Horn project is a 51-square kilometre project located in north-



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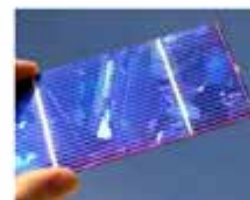
central British Columbia and the only known property in North America with NI 43-101 resource containing gold-silver-tellurium. It is a porphyry-style resource that also contains copper,

molybdenum, lead, and tungsten. The company currently owns 50% of the property and has the option to acquire up to 75%. In 2018 a preliminary economic assessment was completed which

showed robust economics. The after-tax NPV shows a value of \$36.5M with an IRR of 42% using \$1,300 gold. The initial Capex is estimated at \$28.3M with a payback period of 1.6 years.

## Key Applications for Tellurium – Present & Future

- ▶ High-efficiency cadmium telluride (Cd-Te) solar panels
- ▶ Next-generation lithium-ion batteries
- ▶ Semiconductors
- ▶ Thermoelectric devices
- ▶ Phase-change memory chips
- ▶ Low-energy desalination



## ANSWERING THE DEMAND FOR TELLURIUM ONE OF THE PLANET'S RAREST ELEMENTS

Classified as a Critical Metal in North America, tellurium is a key element in the manufacture of solar panels, cutting-edge lithium-tellurium batteries and other emerging technologies.

*"The Klondike property had by far the highest tellurium grades in rock samples of the hundreds of prospects and deposits we examined in the US and Canada."*

Colorado Klondike LLC General Manager John Keller  
and Former First Solar Exploration Manager

*"The Deer Horn deposit in west-central British Columbia contains high gold and silver grades with abundant base-metal sulfides and telluride minerals."*

Critical Mineral Resources of the United States  
US Department of the Interior US Geological Survey



[FirstTellurium.com](http://FirstTellurium.com)

CSE: FTEL

## FIRST TELLURIUM

ESSENTIAL METALS FOR A SUSTAINABLE FUTURE



Deer Horn Property  
Te-Au-Ag

Klondike Property  
Te-Au-Ag



purity (UHP) metals. They sell a variety of UHP metals for use in solar energy, telecommunications, and commercial/military Infrared markets. First Tellurium, Fenix, and UBC Okanagan are currently working together to develop a solid-state, next generation lithium-tellurium battery. On March 9th the company announced that a recent university scientific study revealed the addition of tellurium to existing battery technologies enhanced their life, charge time, safety, size and many other attributes. The partnership has already developed a lithium ion tellurium battery that could be in commercial production within a year.

***“It’s possible that tellurium could have the largest single impact on future battery technology over any other critical mineral,” stated Tyrone Docherty, CEO of First Tellurium. “Its properties are unique, the demand is increasing and America’s mandate is to source tellurium at home and become less reliant on China is changing the landscape. The industry’s tides are shifting in favour of our Company, enhancing the unique position we are in.”***

## Key Project Attributes:

- Recognized by First Solar Inc. as one of the world’s top tellurium properties
- Significant upside copper and tungsten porphyry potential
- Phased development (Small mine approach)
- Indigenous support

## **FENIX ADVANCED MATERIALS PARTNERSHIP**

Fenix is a clean technology company specializing in the manufacture of ultra-high

## What’s Next for First Tellurium?

- 1) Klondike Project** - follow up on First Solar’s recommended drill program in 2022
- 2) Fenix Advanced Materials partnership:** continue advancement of lithium-tellurium batteries
- 3) Investigate and acquire other tellurium projects** in North America
- 4) Deer Horn Project** - further in-fill and step-out drilling to expand resources
- 5) Further investigation of Deer Horn’s copper porphyry and tungsten targets**





## Investing in "The Great Stagflation"



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## North American Green Energy Supply Chain

### SPEAKER PANEL



ROB KIENTZ



DR. LEE WARREN



RYAN SISTAS



BILL POWERS



CHRIS TEMPLE



RICH RADEZ

### FRIDAY 5.6.22

1:00 Badge Pickup  
Exhibits Open

3:00 - Company  
5:00 Presentations

7:00 - Macro Economy  
9:00 Panel w/ Q&A

### SATURDAY 5.7.22

9:00 Badge Pickup  
Exhibits Open

9:00 - Company  
3:00 Presentations

3:00 - Green Energy  
5:00 Panel w/ Q&A

LINCOLNSHIRE  
MARRIOTT  
RESORT

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5.7.22



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## RKV PROJECT- COPPER NICKEL COBALT IN SOUTH CENTRAL NORWAY

BEGINNING WITH ARTIFICIAL INTELLIGENCE, PLAYFAIR IS USING MODERN EXPLORATION METHODS TO EXPLORE THIS 201 SQ KM HISTORIC COPPER NICKEL DISTRICT.

THE RKV PROJECT COVERS 2 PAST PRODUCING VMS COPPER MINES, A NICKEL-COPPER DEPOSIT AND OVER 20 ADDITIONAL KNOWN MINERAL OCCURRENCES

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# A DOMESTIC SUPPLY CHAIN OF CRITICAL MINERALS COULD REVOLUTIONIZE ONTARIO'S NORTH

By Amanda Graff

## AVALON ADVANCED MATERIALS PARTNERS WITH INDIGENOUS LEADERS TO CREATE A LOCAL CLEAN TECH HUB

**A**valon Advanced Materials Inc. (TSX: AVL) is making good on their vision to revolutionize Northwestern Ontario by building a critical minerals supply chain that will fuel our green and clean future. The company is advancing the Separation Rapids Lithium project near Kenora and the Lilypad Cesium-Tantalum-Lithium project near Fort Hope, while looking to build a lithium battery materials process facility in Thunder Bay that will intake concentrates from these projects and other emerging producers across the region.

This supply chain will significantly strengthen the emerging clean economy in Northwestern Ontario, and Avalon's timing couldn't be better: lithium, cesium, and tantalum all made Canada's list of the minerals considered critical for the country's sustainable economic success, and they're in short supply across the globe.



Lilypad-Cesium-Tantalum-Lithium Project



Mr. Donald Bubar, President & CEO, Avalon

"We have a glorious opportunity to start a domestic supply of critical minerals that other parts of the world are struggling to find," said Don Bubar, President & CEO, Avalon. "These minerals offer significant economic growth potential for Northwestern Ontario as we transition to a low-carbon future. The ability to source and sustainably process these minerals while creating a local battery materials industrial hub will provide an exceptional economic opportunity for local First Nations communities."

The company's clean tech vision aligns with a federal mandate to strengthen domestic critical mineral value chains, and the benefits will also reverberate on a local level. Part of Avalon's commitment to ESG which ranked in the top 5% of 150 companies analyzed globally, is an ongoing desire to empower local communities. The

company has a long, successful track record of First Nations collaboration which was recently fortified through the appointment of former Chief of Eabametoong First Nation, Mr. Harvey Yesno, to Avalon's Board of Directors.

### AN EMERGING CLEAN ECONOMY GUIDED BY INDIGENOUS LEADERSHIP

Harvey Yesno and Don Bubar first met 20 years ago while serving on the Smart Growth regional panel for Northwestern Ontario. Harvey recognized Don's deep interest in First Nations protocols and desire to foster mutually beneficial relationships while Don recognized Harvey's broad experience in the region and ability to find solutions to First Nations challenges related to government, the economy, and resource development. From there, a partnership was born.



**“First Nations representation is needed in all segments of society to stimulate economic growth and knowledge,” said Mr. Yesno. “This is where I come in – I can lend my knowledge of First Nations communities, government relations, and business financing to empower representation across a variety of sectors. My involvement on Avalon’s Board will provide an Indigenous voice for how mining should proceed, ensuring a fair and transparent consultation process that protects the environment and traditional ways of life.”**



Members of the WIN First Nation examine drill cores at Separation Rapids

Mr. Yesno is a member and former Chief of the Eabametoong First Nation which he led for six terms, from 1977 to 1991, with an additional term from 2019 to 2021. He also served as Grand Chief of Nishnawbe Aski Nation from 2012 to 2015, and was President and CEO of the Nishnawbe Aski Development Fund (NADF) from 1993 to 2010. NADF is a non-profit financial institution that provides Indigenous entrepreneurs in Northern Ontario with access to capital for start-

ups and business growth. His impressive track record also includes serving as Director of Community Relations for Ontario’s Ring of Fire Secretariat.

“Mr. Yesno is an influential Indigenous leader who is helping to communicate the key message that critical minerals supply chain development will provide significant economic development and new business opportunities for First Nations communities,” said Don Bubar.

**TSX: AVL**  **OTCQX: AVLNF**

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## CRITICAL MINERALS FOR CLEAN TECHNOLOGY

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The Separation Rapids Lithium deposit

"I look forward to working closely with Harvey to inspire greater Indigenous business participation in sustainable development initiatives that will empower Ontario's new clean economy."

Mr. Yesno sees an opportunity for First Nations communities and entrepreneurs to become bigger participants in economic development

and move towards self-sufficiency. He hopes to see more First Nations people join corporate boards and secure senior leadership roles similar to his at Avalon:

**"Greater Indigenous participation at the boardroom level fosters inclusivity so we can**

**move past the 'us versus them' mentality and make room for productive collaboration," he said. "The Indigenous worldview incorporates big picture thinking and integrates a variety of perspectives. This approach to problem-solving not only benefits First Nations communities but can also benefit the country as a whole."**

Mr. Yesno also remarked that First Nations involvement in the mining industry spans back decades, and he seeks to inspire younger generations to get more involved.

"During the Second World War, Indigenous peoples were heavily involved in mines around the Pickle Lake area, and these individuals are now Elders who visit mines to contribute their Traditional Knowledge," he said.

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“My goal is to now inspire younger generations and raise awareness of the opportunities that exist, particularly with regards to a critical mineral like lithium which is needed to power everything from our cell phones to our computers to electric vehicles.”

Part of Mr. Yesno’s role on Avalon’s Board of Directors will include consulting on the Lilypad-Cesium-Tantalum-Lithium property which is located in the traditional territory of the Eabametoong First Nation (EFN), approximately 25 kilometres west of the community of Fort Hope. Mr. Yesno will facilitate early discussions and consultation with harvesters including trappers and hunters, and will engage community leaders with a focus on environmental protection, cultural considerations, and business and employment opportunities.

Drawing from his extensive industry experience and decades-long work with communities in Northwestern Ontario, Mr. Yesno says the key to mutually beneficial partnerships starts with early and effective consultation:

“Early consultation is essential to avoiding project delays down the line. I’ve seen many problems arise because bureaucrats approved permits without first securing adequate First Nations consultation. It’s worth making the upfront investment to have leaders from the resource development company meet with Chief and Council to avoid future conflict,” he said.

## DEVELOPING A CLEAN TECH HUB FOR FIRST NATIONS COMMUNITIES

Building generational wealth on First Nations lands has often been impeded by systemic barriers dating back to the Indian Act. According to Mr. Yesno, overcoming these barriers on the road to self-sufficiency involves providing tools and support that foster project participation and ownership.

This vision of self-sufficiency aligns with Avalon’s ESG strategy as demonstrated by the company’s proposed partnership with the Fort William First Nation (FWFN) on the lithium battery materials refinery in

Thunder Bay. Avalon was contacted by FWFN Chief Peter Collins who expressed an interest in collaborating on the development of the project, and this initial communication subsequently led to the signing of a Letter of Intent.

The refinery will be designed to accept and process lithium mineral concentrates from Avalon’s Separation Rapids Lithium project, as well as from other emerging lithium minerals producers in Northern Ontario. Next steps include confirming the refinery’s location on an industrial site with access to transportation infrastructure, hydro-power, and natural gas.

Once a strategic investing and off-take partner has been engaged, Avalon will embark on final engineering, site preparation, and construction design studies, while capitalizing on funding support available from several government programs. The initial design capacity will aim to produce at least 15,000 tonnes per year of lithium hydroxide, lithium carbonate, and/or lithium sulphate, depending on demand, and the



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capacity will subsequently be finalized to accommodate future expansion as demand increases.

## EXPLORING ONE OF THE WORLD'S LARGEST LITHIUM (PETALITE) PEGMATITE DEPOSITS

Avalon's 100% owned Separation Rapids Lithium project is located in the traditional territory of the Wabaseemoong Independent Nations (WIN), with whom Avalon first signed a Memorandum of Understanding in 1999 that was later renewed when the project was re-activated in 2013. WIN leadership continues to support Separation Rapids and Avalon encourages WIN's direct participation in project development.

Separation Rapids hosts one of the largest complex-type lithium-cesium-tantalum pegmatite deposits in the world and is unusually rich in rare, high purity lithium mineral petalite. Petalite offers potential to produce a high purity lithium chemical product at a relatively low cost to

serve the needs of lithium-ion battery manufacturers. It's also in demand as a high purity lithium mineral for use in the manufacturing of durable glass-ceramic products, a growing and increasingly diverse market.

In 2020, Avalon completed a 5,000t bulk sample program at the project and is currently working towards acquiring a demonstration scale dense media separation (DMS) plant. This will allow the sample to be processed to facilitate additional battery materials process test work, and produce petalite concentrate product samples for the many international glass ceramic manufacturers that have expressed an interest. In commenting on the opportunities the project will provide, Don Bubar said:

**"Getting the DMS plant up and running this year will provide WIN members with an opportunity to partake in facility operations and become familiar with the**

**low-impact gravity process which can lead to further business opportunities for WIN members in the future."**

Encouraging results were recently received from a mapping program on the Northwestern part of the property to follow-up on a new petalite pegmatite discovery known as Snowbank. These latest results extend the known strike length by 50% and confirmed the widespread presence of coarse grained petalite mineralization which is an ideal additional source to supply the glass-ceramic markets. This year, the company plans to initiate diamond drilling to delineate the size potential of the Snowbank discovery while also testing other identified petalite pegmatite targets in the project area.

## BECOMING A SIGNIFICANT PRODUCER OF A HIGHLY VALUED CESIUM MINERAL

Avalon's 100% owned Lilypad-Cesium-Tantalum-Lithium project consists of 14 claims totalling 3,108 hectares



## ADVANCING OUR FLAGSHIP CERRO LAS MINITAS (CLM) AG-PB-ZN PROJECT IN DURANGO, MEXICO 'ONE OF THE WORLDS LARGEST UNDEVELOPED AG-ZN DEPOSITS'

Category	Tonnes	Silver		Gold		Zinc		Lead		Copper		Silver Equivalent	
		g/t	M oz	g/t	000 oz	%	M lbs	%	M lbs	%	M lbs	g/t	M oz
Indicated	12.3M	106	42.1	0.07	28	3.3	895	1.3	358	0.16	44	347	137
Inferred	19.6M	117	73.6	0.12	78	2.3	1,009	1.2	500	0.23	98	314	198

- **100% OWNERSHIP** - Following the highly accretive acquisition of Electrum's 60% stake
- **MULTI-COMMODITY EXPOSURE** - NI 43-101 resource; 116Moz Ag, 1.9 Blbs Zn, 0.9 Blbs Pb, 142Mlbs Cu
- **TARGETING PEA BY Q2 2022** - Excellent metallurgical recoveries/Engineering studies underway
- **DISCOVERY POTENTIAL** - 10,000 m drill program at CLM (4 targets) underway
- **COMPELLING VALUATION** - Trading at a 67% discount to primary silver developers on an EV/oz basis
- **SUCCESSFUL MINE EXPLORERS** - Grown AgEq resources by ~200% since initial 2016 resource estimate
- **↑33% in tonnage and ↑26% in silver eq. resources in October 2021 NI 43-101 Resource Update**

### Oro Cu-Mo-Au Project, New Mexico, USA

- **Cu-Mo-Au Porphyry Target** - multiple drill-ready targets within a six sq.km alteration footprint
- **Z-TEM survey over entire property completed and evaluated, additional claim stake**
- **Initial drilling at Oro Project (~4,000 m) underway**



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across a field of cesium, tantalum, and lithium-rich granitic pegmatites. It has exceptional potential to become a significant new producer of the rare cesium mineral known as pollucite in addition to tantalum and lithium. By including a separate circuit to process pollucite concentrates, the Thunder Bay lithium refinery could accept concentrates from the project to produce cesium carbonate. To put this opportunity in perspective, cesium carbonate is in very short supply and currently attracting prices as high as \$5,000 per kilogram. In commenting on the project, Don Bubar said:

***“The Lilypad project is proving to be a globally unique example of a large field of cesium-enriched LCT pegmatite dykes with significant resource potential. With cesium continuing to be in very short supply, the company***

***is in a strong position to help Ontario become a global leader in cesium production including the innovation of new downstream applications.”***

Considering cesium’s current value, Avalon would begin with a small-scale production of pollucite concentrates using a simple dry process like DMS. The product would then be flown from Fort Hope to Thunder Bay for further processing which would create a near-term economic development opportunity for the Eabametoong First Nation.

Because cesium mineralization occurs in fields of relatively small pegmatite dykes, it’s amenable to a low-impact development approach such as large diameter core drilling to recover the mineralized rock without the need to build a mine or create significant waste. Once road access is established, production could also be expanded to include lithium and tantalum. Don Bubar commented:

***“The mineral industry in Canada is finally starting to embrace innovative, sustainable recovery and extraction techniques for critical minerals that leave a minimal environmental footprint. There’s also enormous potential to innovate new applications for rare elements like cesium in support of local technology materials supply chains. With the abundance of critical mineral resources across Northern Ontario, First Nations are well positioned to become future leaders of this supply chain development.”***

For more information on Avalon Advanced Materials Inc., please visit: [avalonadvancedmaterials.com](http://avalonadvancedmaterials.com)

## SIRIOS RESOURCES INC.

Sirios is a Canadian exploration company focused on developing its high quality gold projects within the Eeyou Istchee James Bay region of Quebec.

The flagship Cheechoo gold project contains 2.0 Moz Au (93.0 Mt @ 0.65 g/t Au) inferred resources with significant upside for expanding the mineral resources.



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# ANSWERING THE WORLD'S CALL FOR COPPER

By Amanda Graff

## CAVU MINING RESPONDS TO A GLOBAL SUPPLY AND DEMAND IMBALANCE BY EXPLORING WHAT COULD BE A WORLD-CLASS COPPER PROJECT IN YUKON

Copper is the third most consumed industrial metal in the world and made history last year by hitting its highest level ever in Q2. A surge in funding available to foster green innovation combined with trillion-dollar infrastructure initiatives including Biden's Build Back Better and China's Belt and Road has copper's future looking bright for years to come.

Roughly 25 million metric tons of refined copper was consumed in 2020, and over the next 10 years, worldwide demand is expected to rise by 31%. Copper will play a starring role in the advancement of green technologies and is a staple in 5G wireless, electric vehicles, grid-scale energy storage systems, and renewable power plants.

While demand is sky rocketing, global copper production is on the downswing, constrained by a number of factors including declining ore grades, a lack of investment in new mines, and political instability in copper producing regions. This is revealing an incredible opportunity for junior explorers operating in mining-friendly jurisdictions, and projects located in the U.S., Canada, and Australia are becoming highly sought after.

Enter Vancouver-based **CAVU Mining Corp. (CSE: CAVU)**, a junior mining company actively engaged in acquiring, exploring, and developing Canadian-based copper projects with a focus on the Hopper Copper-Gold project in Yukon. The company also recently acquired the Quesnel Copper project in B.C., an early-starter with ample discovery potential.

"Copper stands to benefit enormously from the world's transition to cleaner energy, as its malleability and superior conductivity make it the metal of choice for energy transition," said Dr. Jacob Verbaas, CEO & Director, CAVU. "The world will need more copper yet the output of major producers is declining, and there isn't a sufficient source of new supply. We recognized a phenomenal opportunity to develop domestic projects with potential to infuse a serious supply of copper into the market."

### BREATHING NEW LIFE INTO THE RED METAL BUSINESS

CAVU was founded in 2020 and has made major strides in just a few short years. Last year, the company listed on the CSE, closed a deal with Strategic Metals to earn a 70% interest in the Hopper project, and successfully completed an inaugural exploration program at the property. The company also applied

for a new 10-year exploration permit, and secured a private placement to fully finance the 2022 program.

These activities are overseen by an exceptional team of capital market professionals with intimate experience identifying and exploring for copper in B.C. and Yukon.



Mr. Allen Edzerza is a senior negotiator and proud member of the Tahltan First Nation

At the helm is CEO & Director, Dr. Jacob Verbaas, an exploration geologist with a solid track record of regional targeting and a knack for combining novel technologies with traditional methods to further project-scale exploration strategies. He has extensive experience across Australia, Northern Africa, and Canada, and has worked in a number of executive roles with Canadian public exploration companies.



Data from the 2021 Hopper Copper exploration program has been compiled to inform follow up drilling



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The company is also guided by a highly experienced advisory board to which senior negotiator Mr. Allen Edzerza was recently appointed. A proud member of the Tahltan First Nation, Mr. Edzerza has served as Lead Negotiator for the Tahltan Central Council and Chief Negotiator for Kaska Nations, and has held several senior positions in INAC, Government of Canada. He was previously contracted by the Yukon Premier as an advisor and negotiator on Aboriginal matters in Yukon, and was appointed as Special Advisor on Aboriginal Issues to the Office of the Premier, Government of B.C.

His appointment to the Board reflects CAVU's strong commitment to ESG principles: "Our philosophy is that everyone located in close proximity to the project should benefit from our activities and there should be no negative downstream effects," said Dr. Verbaas. "Mr. Edzerza's understanding of First Nations perspectives and negotiation skills will serve as bridge between our company and local communities."

When asked about his decision to align with CAVU, Mr. Edzerza said:

***"The company's management team takes a proactive approach towards First Nations engagement – they're energetic, innovative and have the potential to become new leaders in mining. My role will be to lend my knowledge to ensure business is conducted in such a way that respects and promotes sustainable land use and resource sharing."***

#### **POTENTIAL FOR A WORLD CLASS COPPER PROJECT**

CAVU's 2021 exploration program at the Hopper Copper-Gold project was a resounding success on several fronts. The company moved from acquisition to drilling in just four months, encountered mineralization in every hole, increased the size and scope of the property's skarn zone, and made a new copper porphyry discovery that substantially increased exploration potential.

Hopper is a large copper porphyry-skarn project located 120 kilometres northwest of Whitehorse that benefits from proximity to robust infrastructure and access to skilled labour. It's a short distance north of the Otter Falls hydroelectric generator, 320 kilometres from a deep sea port, is fully road accessible, and permitted for road and trail building.

***"Our location is ideal, the project is a two-hour drive from Whitehorse, and most of the drive is along roads maintained by the government," said Dr. Verbaas. "Our drill sites are all road-accessible and there's no need for continuous helicopter flights. Also, Whitehorse is home to many skilled contractors that can service the project."***

The 2021 exploration program encompassed 1,119 metres of diamond drilling across six holes, with an aim to



**CSE:CAVU OTCQB:CAVVF FSE:8NQ**

**COPPER EXPLORATION IN YUKON AND BC**



CAVU acquires, explores, and develops copper projects with a focus on the Hopper Copper-Gold project in Yukon

test and extend known mineralization within the skarn south zone, otherwise known as Copper Castle, while targeting a high-priority geophysical anomaly in the porphyry central zone.

Drilling confirmed the existence of a mineralized porphyry at Copper Castle over a 1.3-kilometre strike length while extending the zone to the south. It also resulted in the longest high-grade copper intercept ever at the project. The zone is open for expansion in all directions except the north, and it's believed the highest-grade portion of the claim is yet to be tested.

Another area that will be further explored is the northern skarn zone which is characterized by copper in soil anomalies and high-grade copper grab samples. CAVU suspects the area to the north of the Hopper may host skarn mineralization similar to Copper Castle.

Data from the 2021 exploration program has been compiled to inform follow up drilling planned for late spring of this year, and the company recently filed an NI 43-101 with a comprehensive drill plan to advance the porphyry target. Dr. Verbaas commented:

**“By tying in the new drill results with our geophysical data, we’ve developed a much larger target area that’s been subject to very little drilling in the past. Our goal this year is to get a true sense of the size and scope of the mineralization, and if we discover that there is a large, high-grade mineralized portion to the porphyry target, we may be looking at a world class copper system.”**

## COMMUNITY ENGAGEMENT THROUGH INDIGENOUS LEADERSHIP

As CAVU works towards developing a domestic supply of one of the hottest metals in the green revolution, all activities are underpinned by a commitment to benefiting local communities while managing the environmental footprint.

The Hopper project is located within the Champagne and Aishihik First Nations (CAFN) traditional territory, and CAVU has engaged CAFN government with the intention of ensuring their People benefit from employment, training, and contracting opportunities. Castle Rock Enterprises, a CAFN company, has supported the project in a number of ways including the construction of onsite access roads, and in recognition of their significant contribution, CAVU

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renamed the main high-grade copper skarn zone “Copper Castle.”

Mr. Edzerza’s appointment to the board will provide guidance in further establishing mutually beneficial relationships. He has recently been leading mining reform discussions with the Government of B.C. on behalf of the First Nations Energy and Mining Council, and was part of a team of First Nations leaders from across the province that came together in solidarity to develop recommendations outlined in a report titled Indigenous Sovereignty: Implementing Consent for Mining on Indigenous Land.

He also founded the company Volta Solutions through which he specializes in providing strategic advice to improve communication and relationships between First Nations, public governments, and industry. Volta Solutions focuses on four key tenants of negotiation, shared decision-making, partnership, and capacity building. Through his many years of experience, Mr. Edzerza believes the negotiation process should resolve differences and

bring together conflicting points of view, while shared decision-making is essential to ensuring parties negotiate to their mutual benefit. In commenting on the Hopper project, Mr. Edzerza said:

**“As CAVU will be operating on CAFN territory, we will secure the community’s input before applications are submitted for drilling or permits are renewed. This demonstrates respect and establishes a partnership that could last decades, with opportunities for training, employment, and possibly scholarships and revenue sharing as the project moves forward.”**

He says one of the keys to respectful collaboration is early consultation, and exploration companies operating in First Nations territory should be

required to inform the community that they’re interested in prospecting before staking any claims: “Early consultation is key to ensuring Indigenous perspectives are integrated at the outset while allowing relationships to be cemented early on, providing a foundation for ongoing success as projects evolve and new ones emerge,” he said.

In addition to the Hopper project, Mr. Edzerza’s insights and networks with First Nations across Canada will be beneficial to CAVU’s future exploration programs and acquisitions. Dr. Verbaas commented:

“Mr. Edzerza brings an important First Nations perspective to our company and we look forward to working with him to implement local hiring practices and build a collaborative approach to sustainable and responsible mining.”

Learn more about CAVU Mining at: [cavumining.com](http://cavumining.com)

Learn more about Allen Edzerza at: [allenedzerza.weebly.com](http://allenedzerza.weebly.com)



# TALISKER RESOURCES SECURES DOMINANT LAND POSITION ON THE ROAD TO MULTI-MILLION-OUNCE POTENTIAL

By Amanda Graff

**W**hile gold mining in British Columbia is often associated with the Golden Triangle, **Talisker Resources (TSX: TSK)** has been hard at work tapping into enormous potential located in the south-central region of the province. A first-mover with a dominant land position in emerging and frontier gold belts, Talisker is building a far-reaching project pipeline with a focus on the advanced stage Bralorne gold project, a historical high-grade producer with multi-million-ounce potential.

The company is also actively exploring the Spences Bridge project and holds ~85% of the emerging Spences Bridge Gold Belt, one of the province's newest trends that's seen a major staking rush since Westhaven Venture's gold-bearing vein system discovery in late 2017. Multiple world-class greenfield projects round out Talisker's portfolio, with properties comprising 291,339 hectares over 322 claims, six leases, and 181 crown grant claims, all backed by strong funding and a solid institutional shareholder base.

"We're a lot more than just Bralorne, our company is building a pipeline and amassing a number of discoveries so we can build out multiple projects," said Terry Harbort, President & CEO, Talisker Resources. "This is a somewhat forgotten mining district that boasts incredible potential. With so much focus on the Golden Triangle, people often forget about the incredible value that we have right under our noses."

Talisker is a company that doesn't waste any time – in the first year of exploring along the Spences Bridge Gold Belt, the company defined 100 anomalies that will be subject to further exploration. At Bralorne, legacy infrastructure from historical mine works has allowed the company to achieve milestones at an accelerated pace, and the project benefits from

direct highway access, grid-connected electricity, a mill building, a permitted tailings storage facility, and a state-of-the-art onsite water treatment plant.

***"Many new projects in the north are far from infrastructure and incur a cost burden associated with flying people in and out," said Terry Harbort. "We're in an excellent location with close proximity to the population of south-central B.C. and robust infrastructure that's already in place. Because of the historical work that's been done, our permitting is secured and we have sound knowledge of the rock and water chemistry – all factors that allow us to operate economically and accelerate project timelines."***

Talisker's ability to deliver on aggressive timelines is also attributed to its exceptional management team. The company is led by one of the most experienced and successful teams and boards in the gold exploration industry, hailing from majors including BHP,

Anglo American, AngloGold Ashanti, and Osisko Mining. Together, the team has collaborated for more than 20 years and has a clear vision of what it takes to succeed in resource exploration.

## UNLOCKING DISTRICT-SCALE POTENTIAL FROM A PAST PRODUCER

Talisker's flagship project has an impressive history. Renowned as one of the highest-grade, longest producing mines in B.C., the three historic mines of the Bralorne Mine Complex produced a total of 4.2Moz at an average recovered grade of 17.7g/t. Of the 63 veins identified, only 30 were mined, the majority of which were only mined to a maximum depth of 900 metres. One vein was mined continually to depths of 1.9 kilometres which demonstrated the incredible continuity of the structure, and all veins remain open at depth with many open at strike. Bralorne's deposit lends itself to excellent mine-ability due to high-grade consistency and vein structural continuity. An orogenic gold vein system, the deposit is akin to the Motherload deposit of California, the Cariboo deposit in B.C., and the Curraghinalt deposit of Northern Ireland.

Historically, metallurgical recovery rates have averaged around 90%, with 65% of recovery derived from a gravity circuit and 35% from a flotation concentrate, but Talisker anticipates this recovery could be improved utilizing modern mineral processing methods.



Talisker is undertaking one of the largest drill programs in the province of B.C.



"This type of deposit is formed during the mountain building process and is characterized by exceptional vein continuity, up to a couple of kilometres in length, along with very good ore shoots where high-grade gold is evenly distributed," said Terry Harbort. "This renders the deposit highly mineable and alleviates project uncertainty, a key geological aspect that makes this project especially interesting."

Production was closed in 1971 due to the subdued gold price, and there remains ample exploration potential which has been further expanded through acquisitions and consolidations of neighbouring claims and mines. Last year, Talisker acquired New Carolin Gold and took ownership of the Ladner gold project which includes the former producing Carolin Gold Mine. The project strongly complements the flagship asset at Bralorne with a compliant mineral resource estimate and a district-size land package.

Talisker also purchased 100% ownership in the highly prospective Pioneer Extension claims that are contiguous

with the main Bralorne gold camp and include 14 mineral claims covering the extension of known mineralization along the southeast strike of the emerging bulk-tonnage Pioneer zone. Purchasing these claims was a key step in controlling the full 30 kilometres of the Cadwallader Break, the main conduit for gold mineralization in the Bralorne District.

**"Previously, land ownership was fragmented, making it difficult to carry out systematic exploration," said Terry Harbort. "We put the district back together so there's a coherent land package that will support a long-lived project. By filling in the gaps and adding adjacent claim blocks, we're able to capitalize on the expansive mineralized trend and bring benefits to our shareholders on a swift timeline."**



Bralorne's deposit lends itself to excellent mine-ability due to high-grade consistency

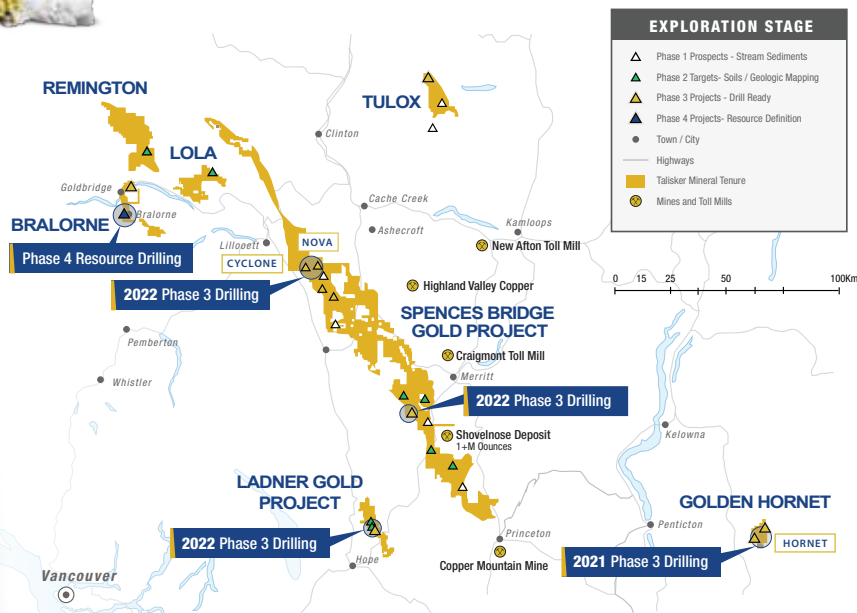
Today, the Bralorne gold project is a district-scale, consolidated land package of 11,700 hectares where 47 small mines and vein occurrences have never been subject to modern exploration techniques. Talisker is currently compiling a wealth of historic exploration data to build a

## Talisker RESOURCES

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The Bridge River Indian Band is a top tier partner and 15% of mine personnel are Indigenous

comprehensive 3D model which will allow the project team to zero in on multiple brownfield targets outside of the immediate camp.

The company is also undertaking an extensive drill program at Bralorne with 227 holes and 117,000 metres of drilling completed of a planned 130,000 metres. It's one of the largest programs across the province, and Talisker is working towards a maiden resource estimate which is anticipated for Q2 of this year. Results to date have consistently confirmed high-grade continuity, in some cases over significant strike lengths of 660 metres, positioning Bralorne as a low-risk, high-value project.

"This is one of the largest-scale maiden exploration programs in the province and results so far demonstrate a very consistent deposit with high-grade values in a well-defined range. That's one of the reasons this project was mined in the past – it's a low-risk, high value model for shareholders," said Terry Harbort.

Talisker already has a mine permit in place which allows for an operations area of approximately 683 hectares and an underground mining and surface processing operation at an average production rate of 100 tonnes

per day or 36,500 tonnes per year. They also hold a permit under the Environmental Management Act that allows for the management, treatment, and discharge of process and contact water from the site.

The company was pleased to recently announce plans to secure permitting for expanded mine development and production. They've initiated work to update the underground mine plan in support of increased production of 1,500 tonnes per day which would take advantage of both underground and surface infrastructure already onsite. This is a key step in unlocking the project's true value – once the maiden resource estimate is complete, Talisker will initiate the resource expansion and begin to target the Ladner project area with a goal to reach an initial 1 million ounces of resource.

## BUILDING A MULTI-PROJECT PIPELINE

In addition to Bralorne, Talisker also had some good news to share from its maiden drill program at the Golden



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- Looking for the source of the rich placer gold at Wingdam
- Jagged-edged placer from paleochannel can indicate nearby source
- Parallel and mirror image geology to Osisko's Cariboo Gold Project

### PLACER RECOVERY

- 173.4 oz recovered from a single 24m long, 2.4m wide test crosscut
- 2022, initial 300m of paleochannel (100+ crosscuts)
- OMM has up to 15 km of potential paleochannel

See maps, photos and videos of placer recovery & exploration targets at [ominecaminingandmetals.com](http://ominecaminingandmetals.com)  
Contact the Company at [info@ominecaminingandmetals.com](mailto:info@ominecaminingandmetals.com)

**TSXV: OMM**



Hornet project, located near Rock Creek in south-central B.C. Comprised of 4,959 hectares across a known intrusion-related gold vein system, previous work at Golden Hornet revealed a northwest-trending sheet vein system with trench sample intercepts of 21.1g/t gold over 5.1 metres and 4.17g/t gold over 14 metres, while confirmation grab sampling of the veins returned values of 26.1g/t and 12g/t gold.

Subject to very limited drilling in the past, Talisker was pleased to announce assay results from the first four holes of a 14-hole program which confirmed high-grade gold intercepts across each hole, demonstrating the potential for a kilometre-scale mineralized system. Highlights included 8.88 g/t Au, 0.42% Cu and 14.99 g/t Ag over 5.1 metres and 11.58 g/t Au, 0.37% Cu and 11.1 g/t Ag over 1.05 metres.

Talisker also recently released initial sampling results from the never before drilled Barnato prospect located within the Golden Hornet camp. Mapping identified multiple high-grade sheeted

veins with a potential strike length of one kilometre, and eight rock samples returned gold grades exceeding 15 g/t with the highest reaching 61 g/t Au, validating historic high-grade results. Rock channel samples assayed 28.5 g/t Au over 1.2 metres and 19.40 g/t Au over 1 metre while select rock samples assayed 63.53 g/t Au, 38.90 g/t Au, 30 g/t Au, 28.98 g/t Au, 18.57 g/t and 15.61 g/t Au.

***“Following on from our recent high-grade discovery at Golden Hornet, these samples potentially extend mineralization up to three kilometres from our drilling. We’re excited to see a similar style of mineralization in the Barnato area as we’ve drilled at Golden Hornet,”***  
said Terry Harbort.

Another area of focus for Talisker this year will be the highly prospective Spences Bridge Regional Program, a massive 194,038-hectare land package covering over 85% of the Spences Bridge Gold Belt which represents one of the single largest staking exercises in the history of the province.

The company has formed a strategic alliance with Westhaven Ventures who owns the high-grade epithermal discovery, and in spring of 2019, Talisker aggressively explored Spences Bridge with a geochemical program that identified over 100 anomalies. With more than 20 geologists back in the field, Talisker will be following up many of these targets to determine suitability for drilling.

Just 34-kilometres west of Spences Bridge, Talisker’s portfolio also includes the Remington Regional program, a claim package consisting of 34,001 hectares distributed between 24 contiguous claims. This package was staked based on geochemical signatures identified in historic

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government and assessment data, and resides along the underexplored Bridge River Formation which Talisker believes to be prospective for low-sulphidation epithermal gold systems.

Other projects in Talisker's portfolio include the 15,002-hectare Lola claim and the Tulox project comprised of 23 contiguous mineral claims.

## FORGING A NEW PATH FORWARD FOR COMMUNITY ENGAGEMENT

In all of its endeavours, Talisker prioritizes meaningful and constructive relationships with Indigenous communities throughout the southern region of B.C., including the St'át'imc Nations whose lands the Bralorne gold project resides on. Talisker has an Exploration Agreement and close working relationship with one of the St'át'imc communities, the Bridge River Indian Band ("Xwisten"), and as the project develops and expands, Talisker intends to work with Xwisten leadership to advance the development of an Impact Benefit Agreement.

The St'át'imc are the original inhabitants of the territory and the St'át'imc Nation is composed of eleven distinct and self-governing communities including Xwisten which has 460 members. In 1998, the St'át'imc Chiefs Council was formed so that the communities could work collectively to advocate on various political topics including title and rights issues.

"We believe everyone located in close proximity to our projects should benefit, and we're committed to working with Indigenous partners," said Terry Harbort. "We offer training, employment, and business opportunities to surrounding

communities and the Xwisten Bridge River Indian Band is one of our top tier partners, while 15% of our mine personnel are members of Indigenous communities."

All activities proposed by Talisker in its expansion and permit amendment process will continually be discussed with the management, technical advisors, and leadership of Xwisten to ensure measures are in place to protect the natural environment, culture, and heritage of the Bridge River area. Chief Ina Williams of Xwisten commented:

**"We're pleased with Talisker's meaningful engagement and commitment to building a trusting and long-lasting relationship."**

Talisker's Indigenous engagement policy will extend to all communities that surround Bralorne, the Bridge River Valley, and Squamish Lillooet Regional District. The company will remain committed to engaging openly and transparently, seeking input through the conceptualization, design, and permitting process, while listening and acting on concerns when they are brought forward by the community.

**"Our commitment to community engagement extends beyond what is required by legislation, and we prioritize early consultation, meeting with Chief and Council right after we've staked the ground,"**

**said Terry Harbort. "This enables full transparency at the outset, providing communities with an opportunity to express any fears or concerns before early-stage work begins. It also allows our company to seek out partners and stakeholders with whom we can build a mutually beneficial relationship."**

Talisker's success in partnering with Indigenous communities has been greatly enhanced by teaming up with Christy Smith, a senior Indigenous negotiator, facilitator, and engagement expert. Christy is a member of K'ómoks First Nation who has navigated both Indigenous and non-Indigenous worlds while working in the resource sector for over 25 years.

Her work is deeply rooted in reconciliation and involves building positive relationships. Throughout her career, Christy has negotiated countless benefit agreements, advocated on behalf of First Nations' governments and industry proponents, and built organizational capacity. Terry Harbort commented: "Our company is very fortunate to have Christy on our team – her deep understanding of First Nations communities and the mining industry has created a bridge between two worlds and her long-term vision has enabled our success."

In collaboration with Michael McPhie, Vice President of Sustainability and External Affairs at Talisker, Christy Smith recently co-authored a book titled "Weaving Two Worlds" which focuses on a shift within the resources sector towards becoming allies with Indigenous communities to create opportunities and play a role in economic reconciliation. Terry Harbort commented: "Old school thinking once tarnished the mining industry, and now it's all about building trust. It's in everyone's best interests to build a win-win situation and we're hoping to pave the way towards a new way of doing business."



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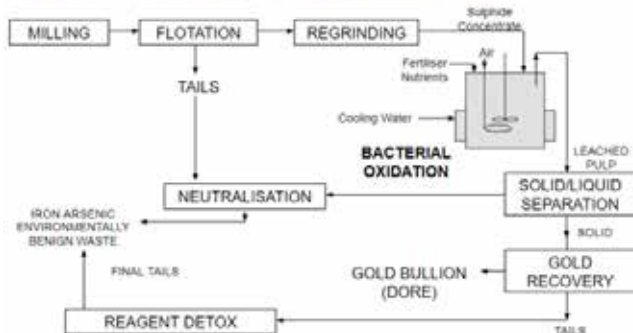
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# BIOLEACHING – BACTERIA AND METALS RECOVERY

By Christian Elferink

**B**ioleaching, if you are an investor in the mining industry you might have heard of the term. Bioleaching is a process that uses natural bacteria, to recover metal with eco-friendly remediations solutions. Conventional recovery methods like gravity/flotation at operations remove sulphides from ore/tailings to make high-grade gold/arsenic concentrates. Sulphides are the source of sulphuric acid that also contain the valuable metal to be recovered. It is notoriously hard to introduce and finance new technologies in mining, but **BacTech Environmental Corporation (CSE:BAC) (OTC:BCCEF) (FSE:ØBT1)** has developed a commercially-proven process that involves bioleaching arsenopyrite (arsenic/sulphide ore) concentrates produced from mining and/or tailings. BacTech uses naturally occurring bacteria, harmless to both humans and the environment, to neutralize toxic concentrates from mines with high-pay potential. Toxic heavy metals, like arsenic, are converted into stable, environmentally benign products that can be disposed of in a landfill. As per BacTech: ‘Our Bugs Eat Rocks!’

## Our Bugs Eat Rocks!



### PONCE ENRIQUEZ FEASIBILITY STUDY

The feasibility of their plan has been confirmed by an independent South American metallurgical engineering and development firm. The firm was engaged in July 2021 to undertake the independent bankable feasibility study for the Company's proposed bioleach processing plant to be located

### PONCE ENRIQUEZ PROJECT



CSE:BAC | OTCBB:BCCEF | FRA: ØBT1

in Tenguel, Ecuador. BacTech released the results from the feasibility study on February 8th, 2022. The study shows an economical and attractive project with the key economic highlights detailed below:

- Pre-tax NPV (Net Present Value with 5% discount rate) of \$72M
- Pre-tax IRR (Internal Rate of Return) of 63.5%
- Annual Gold Production of 30,900 ounces
  - Annual Silver Production of 42,000 ounces
  - Gold Equivalent Production of 31,400 ounces
- Capital Cost of \$17M
- Bioleach Operating Cost of \$212 per tonne
- Assumed Purchase Prices of Concentrate – 65% of the contained gold value
- Pre-tax Earnings Prior to Employee Bonus – \$10.94M
- Payback (70% DEBT) – 2 years

“These results exceed my own expectations – especially an NPV of almost \$72M and IRR of 63% and provide a significant confidence boost for our proposed bioleaching project to move forward,” said Ross Orr, CEO of BacTech Environmental. “This past year we’ve worked hard to create lasting relationships with local government and industry partners that will benefit both plant production optimization as

### Local Benefits

- Local processing offering better prices to miners
  - Support from the Ministry of Artisanal and Small Miners
  - Solves market uncertainty for existing sellers facing low prices and delayed payments
  - Potential to become a regional processing hub
  - Current tailings are approaching capacity
- 
- First phase of the plant will have 50 tpd capacity
  - Opportunity to expand without disrupting operations (modular)-current mkt is 250 tpd
  - Plant lifespan estimated at 20 years
  - BacTech will buy the land that the plant is built on
  - Only 30km from nearest port

well as the community and resident economy to make a community-wide positive impact. We’ve built some cushion into the Capex to accommodate rural supply chain realities, all of which is offset by a much lower Opex than what we originally envisioned. So, what we’re looking at are some very healthy numbers that place us firmly in control of our triple bottom line – being People, Planet and Profit. You could say this project has ticked all the boxes for investment as well as from an ESG perspective.”

### CHINA RAISES TAX ON GOLD/ARSENIC CONCENTRATE IMPORTS

A large portion of the mined gold concentrates in South America are sent to China for processing. In October 2021, the Chinese government introduced a 13% tax on imported arsenic/gold concentrates. It is estimated that miners across South America are getting paid 50% or less for the gold values in their concentrates. This has a significant impact on the profitability of the small-scale miners. In total, there are over 90 small mines operating in the Ponce Enriquez area of Ecuador. BacTech intends to return local miner compensation back to previous payment levels, prior to a sweeping price reduction imposed by Chinese buyers due to recent import levies on arsenic/gold concentrates entering China. It’s the same story in Peru where CEO Ross Orr recently met



with Peruvian miners. In one example from Peru, a miner was getting US\$80 per tonne for rock valued at US\$500 at current market prices. This is all due to the presence of high levels of arsenic.

### WHAT IS NEXT?

On February 14th the company announced a C\$3 million non-brokered private placement offering. BacTech announced that interest was expressed for the full amount. The net proceeds of the offering will

be used for ongoing working capital, land acquisition, and to advance the company's Ecuador bioleaching project. The private placement is done at a significant premium to market. The new shares will be issued at a price of C\$ 0.20 while the stock is currently trading at C\$ 0.135. The common shares are accompanied by a full 24-month warrant and a royalty incentive. This royalty will be based upon the revenues generated by the Company's proposed Tenguel - Ponce Enriquez facility to all investors who subscribe for Units hereunder. For each \$1.0 million of the

Offering, the Company will offer a 0.5% royalty. As laid out in the feasibility study an amount of C\$3,532 will be paid annually to the holder of the royalty on every tranche of \$10,000 invested in the common shares. To entice early exercising of the warrants BacTech will issue an additional royalty to the holder if its done within the first 6 months. The royalty will terminate once the investor has received 200% after tax payments on his investment.

The company is currently working to complete the detailed engineering on the project and get the project permitted for production. To get the project up and running the company still needs to raise US\$12 million in project debt financing. Once this all has been achieved the company can start the relatively short construction period that will be concluded at the end of Q1/23. If everything goes according to plan the plant can start in Q2 2023 to let the cash flow commence!

## PONCE ENRIQUEZ PROJECT TIMELINE ESTIMATES

Ecuador Project	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023
Feasibility Study	Completed				
Project Financing	In Progress				
Detailed Engineering	In Progress				
Permitting	In Progress				
Construction					
Plant Start-Up					



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### UPCOMING MILESTONES:

- Bankable Feasibility Study with Pre-tax NPV (Net Present Value with 5% discount rate) of \$60.7M (up 29.4% from \$46.9M) and Pre-tax IRR (Internal Rate of Return) of 57.9% (up from 48%) Figures updated in February 2022
- Plant Financing will be finalized following the completion of the Feasibility Study. BacTech intends to review all funding options available to consider and maximize shareholder value
- Plant Design and Equipment Procurement will also be pursued following the Feasibility Study
- Plant Construction – target start in Q2 2022

**FOR MORE INFORMATION:**  
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# NEWCREST'S \$4 BILLION INVESTMENT IN THE GOLDEN TRIANGLE:

## WHAT DOES NEWCREST KNOW THAT OTHERS DON'T?

By Lawrence Roulston

**A**ustralia's largest gold producer entered the Golden Triangle two years ago by paying US\$800 million for a controlling stake in the Red Chris copper-gold mine. After getting to know the region, Newcrest just invested another C\$3 billion to buy Pretium Resources. Newcrest now owns both of the operating mines in the region.

There is a lot more to the Newcrest strategy than just adding ounces in the ground and bulking up its annual gold production figures, even though those figures are impressive: Newcrest will produce more than 300,000 ounces annually from its Golden Triangle mines immediately and that will go to 600,000 ounces annually with the first phase expansion at Red Chris.

A look at the geology will explain the strategy. The Golden Triangle geology is similar to Newcrest's Cadia mine complex in Australia. That cluster of underground mines, in the fiscal year through June 2021, produced 765,000 ounces of gold and generated \$1.8 billion of operating cash flow or \$1.2 billion of free cash flow, that is operating cash flow less capital expenditures.

That huge cash flow was generated by underground mines with a grade of just 0.95 g/t gold and a recovery rate of only 77%, figures that would not normally generate huge profits. The key to success at Cadia is the fact that it is based on a porphyry copper-gold deposit... and a particular variety known as an alkalic porphyry. In this type of deposit, the

ratio of gold and copper is skewed heavily toward gold. While Newcrest doesn't report the copper grade in its production figures, the average resource grade is 0.13%. That grade is about one third of a low-grade porphyry mine. For example, Teck's Highland Valley operation in BC processed 0.37% copper in the latest quarter.

***At Cadia, even though the copper grade is low, the value of the copper covers more than the entire operating cost of the mine. That means that 765,000 ounces of gold were produced for free. The AISC (All-In Sustaining Cost) at Cadia was negative \$109 per ounce for FY 2021. Newcrest's overall AISC was \$911 per ounce for that period.***

Cadia's \$1.8 billion of operating cash flow compares to a total of \$0.5 billion of operating cash flow from its other

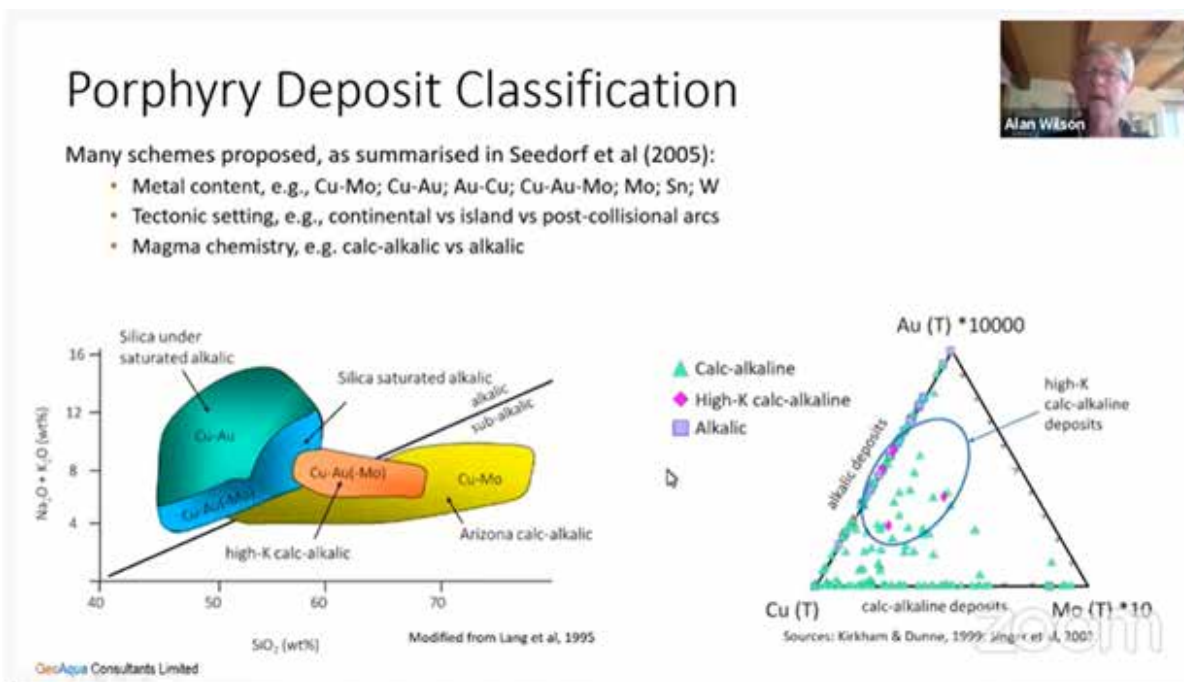
five operations, which produced twice as many ounces as Cadia.

It is not surprising that Newcrest management would go out of their way to get their hands on another Cadia.

### WHAT IS AN ALKALIC PORPHYRY

Alkalic porphyrys are essentially the same as other porphyrys: magma derived from subducting tectonic plates rises through the crust. Metals such as copper, gold, silver, and molybdenum that are not incorporated into the normal rock forming minerals are expelled from the crystalizing magma to form mineralized halos around the edge of the intrusive rock.

Under certain circumstances, the porphyry magma carries extra doses of potassium and sodium (hence "alkalic"). That alkalic condition is correlated with a higher ratio of gold to copper. The diagram is from Alan Wilson, who worked for years at Cadia.







All types of porphyrys are worth going after: The majority of the world's copper is produced from porphyrys. They are typically large, creating the basis for long-lived mining operations. For the gold producers, the alkalic porphyrys are particularly appealing due to the promise of a favorable gold content.

There are a few places where alkalic porphyrys have been identified: the

most notable are the Lachlan Fold Belt of eastern Australia (home to Cadia) and the Golden Triangle of BC (where Newcrest is investing heavily.)

The other big mining companies are paying attention to the Golden Triangle, even if they aren't moving as aggressively: The world's number one gold producer – Newmont – last year paid C\$420 million for GT Gold to get

their hands on the Saddle porphyry deposit. They had previously bought a half interest in the Galore porphyry. Seabridge and Tudor both describe their porphyrys as gold deposits, barely mentioning the copper content.

Strictly speaking, neither of Newcrest's projects in the Golden Triangle is an alkalic porphyry: Red Chris is on the border between alkalic and calc-alkalic; Brucejack is an epi-thermal occurrence related to a calc-alkalic porphyry. Both of those deposits are far enough along the spectrum to host gold contents much higher than most porphyrys. Beyond controlling two large gold deposits, Newcrest now has the dominant position in one of the great alkalic porphyry clusters, putting them in an ideal position to make further acquisitions in this exceptionally gold-rich region.

Exploration companies that find alkalic porphyrys will become very popular among the big gold producers.

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# IS RESOURCE MINING PREPARED FOR CHANGE?

HOW A CHANGING LANDSCAPE AND LESSONS LEARNED CAN HELP GOLD AND OTHER RESOURCE MINING COMPANIES CAPITALIZE ON THE IMPENDING BOOM

By Greg Rankin

**B**uyer Beware! Mergers and Acquisitions (M&A) are expected to increase in the mining sector over the coming years. This will lead numerous companies to face a new paradigm within the industry. Even when those assets are in traditionally safe jurisdictions, a tectonic shift in how mines must now operate is already increasing the risks for companies that are not prepared to take on the new challenges.

"There are a lot of things that were not really an issue five years ago, but today they can make or break your project," says Antonio Maragakis, COO of **Element79 Gold Corp. (CSE:ELEM) (FST:7YS)**, a junior mining company with a growing list of global assets.



Antonio Maragakis

Maragakis has a long history in the mining and energy fields. His resume includes management and director-level positions overseeing multi-billion-dollar project portfolios internationally within organizations such as Barrick Gold Corporation, Freeport-McMoRan Inc., and Koch Industries.

*"Everybody has a mining site that may be the next big thing," adds Maragakis. "However, I think there's a lot more in play now than just having a good property from a technical perspective. There's ESG, new technology, the lack of talent, logistics. Today, there's a long list of non-technical aspects that are just as important as geology and metallurgy."*

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## ESG

At the forefront of those changes is how miners operate in terms of their relationship with the environment, societies and governance. While there is a long list of environmental disasters that the industry has experienced over the last few decades, and strives to improve upon, another aspect of ESG is becoming a growing concern.

"I can't emphasize society enough. Seven or eight years ago it was important, but today it is absolutely critical," explains Maragakis.

Case in point, in 2013, Canadian-based Eldorado Gold Corp. took on a project in Greece. It was intended to be a test case on the country's ability to attract foreign investment, which was badly needed in order to boost the Greek economy.

"They had all the permits, all the funding, everything was good to go," explains Maragakis. "It was supposed to be a two-year construction, and it's still half-built today."

A failure of the permitted project to meet the expectations of the government, society and the company resulted in the project being put into care and maintenance.

***"The good news is the company seems to have addressed the outstanding issues and has a path to restart the project again"***

Another recent example of where the needs of the local community were not properly addressed was in Peru at MMG Ltd's Las Bambas copper mine location. That projects, which had already been producing, was completely stopped at the end of 2021.

According to reports, local residents rebuffed the project and argued that the mineral wealth of the mine was simply bypassing them. In turn, they protested in an attempt to secure more jobs and money for the area. To this point, mining companies would be wise to heed the warning of the

growing list of societal shutdowns and begin taking a more joint venture approach with the local communities and governments.

"The litmus test should be that the local society is proud to be working with the mine and is the biggest partner and proponent, rather than its disgruntled neighbor," says Maragakis. "This means establishing concrete plans that meet both their immediate and future needs."

Furthermore, ESG is not just about avoiding environmental disasters or working more closely with the local communities – both are paramount. Maragakis, who has a Ph.D. in Sustainability, also believes that precious mining could help matters by pushing forward to reduce the industry's environmental footprint.

***"If you can utilize the right energy and control water consumption, the mining part is very sustainable," he says. "You only pull about***

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## 10 grams per ton out of the ground, and then you can put everything else back in.”

In fact, he says Element79 is among a handful of companies currently exploring new technologies and methodologies that are going to put them on the bleeding edge in regards to sustainability.

### LACK OF TALENT

ESG is not the only aspect of the mining industry that has significantly changed since the last cycle. The massive loss of talent is a problem that seems to be getting worse by the day.

“Try and find experienced people in mining between the ages of 30 and 45,” says Maragakis. “You’re not going to find that many people because they all left in the last downturn, it was like a mass exodus.”

This “brain drain” has created an enormous gap in terms of the highly

knowledgeable people in engineering and geology that are needed to drive the science behind mining.

**“Even if a project is super successful – on time, on budget, built exactly as designed – if the technical side is not well interpreted that’s another risk,” says Maragakis. “Honestly, from an owner’s perspective, the quality of some of these designs that are coming out on a macro scale are just not there, and that speaks directly to the lack of talent.”**

All of this puts additional pressure on mining companies to develop better and more efficient methods of mining and processing. Maragakis believes that in many ways junior mining operations may be better positioned for this leap forward.

“While this certainly is not true for all juniors, companies that have the flexibility and the capital to acquire multiple properties and at the same time take advantage of a lot of state-of-the-art technology are going to be better positioned to capitalize on a shrinking labor force,” adds Maragakis. “It is also important that those companies understand the critical nature of change management so they can better utilize the talent that they’re able to acquire through M&A.”

### A CHANGING LANDSCAPE FOR MANAGEMENT

Another area that has been recently exposed by a lack of talent is project management. For example, Barrick piled up huge losses before having to pull the plug on Pascua-Lama – an open-pit mining project of gold, silver, copper and other minerals that straddles the border of northern Chile and Argentina in the Andes Mountains.

The initial cost estimate for developing the property was supposed to be \$1.5



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Partners typically spend approximately US\$1,000,000 on Bravada's properties each year advancing the company's projects.

#### ■ Wind Mountain Au/Ag project

- 2021 Drilling infilled higher-grade portions of the disseminated Resource and expanded shallow parts of the vein zone at the Feeder Target to +300m beneath overburden cover;
- Substantial gold and silver resource with positive PEA in 2012, with updated resource and PEA expected in Q2 or Q3 2022

#### ■ Highland – Recently returned to Bravada after Headwater Gold Inc completed 7 holes (~2,133m) on several targets.

Many attractive high-grade gold targets remain on this large and largely alluvial-covered property.

#### ■ SF/HC – Two “Proof-of-Concept” drill holes in 2019 confirmed the presence of a gold system in favorable host rocks and structures that are similar to those at the large, high-grade Goldrush deposit nearby. Adjacent HC claims were acquired, and additional claims were staked to allow further exploration of this large Carlin-type gold system.

#### ■ Baxter – Drill ready after detailed soil-sampling program.

#### ■ Pete Hanson & Gabel – Expected to be drill ready after a soil-sampling program on each.

#### ■ North Lone Mtn – Zinc and gold soil anomalies drill ready.

#### ■ Shoshone Pediment – Permitting two barite open pits by Baxter Hughes, Royalty to Bravada possible 2022/2023.

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billion USD. However, that number quickly ballooned to what has been reported as close to \$8.6 billion.

“That was also a very difficult project,” explains Maragakis. “You are processing in Argentina, you’re mining in Chile, you’re coming in underground so there were a lot of technical and societal issues there as well.”

It is believed that the initial estimates from project engineers overlooked many of those technical issues. Pascua-Lama will go down as a textbook study on how combining poor project planning with inexperienced leadership for such a complex operation can lead to massive overruns.

**“Projects in the mining space are prolific for blowing out,” says Maragakis. “We’re probably one of the most strapped industries in terms of poor project management and development. That is just a fact. And it provides a strong competitive advantage for diligent capital development teams to unlock value”**

#### MITIGATING RISK

There are a number of other ways mining operations can further reduce their risks within this new era of mining. This can include looking to acquire properties currently being constructed or previously producing mines.

**“This could be something that was put into care of maintenance that you would have to get back up and compliant, or something that is permitted and lets you be a little bit more aggressive with the project development and execution side,”**  
adds Maragakis.

Element79 is a good example of a company utilizing this approach. It is looking to turn many of its acquisitions into proven resource values and then cashflow-positive operations in under two years.

**With inflation at a 40 year high, the price of gold having been historically depressed for over a decade, and a number of mining operations**

**now carrying record low debt should foreshadow a lift for the resource minerals sector. However, failure to mitigate risks and adapt to the rapidly changing landscape within mining will only lead to more projects being devoured by these inevitable pitfalls.**



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## 'GOING DEEPER AT THE MON'.

IN THE YELLOWKNIFE GOLD BELT THERE'S BEEN 15 MILLION OUNCES OF PAST PRODUCTION.

By David O'Brien

**T**he Mon is right in the middle of the 100 km long belt. In its most recent production, the Mon Gold Mine only went down 15 metres (following high grade) while the Discovery Mine went to 1,200m, the Con Mine to almost 2,000m and the Giant Mine to 610m: inferring deeper potential for the Mon, especially since "...it's the same rock, geologically-speaking..." enthuses Dr. Dave Webb, and he should know, having spent the better part of twenty years in the area after completing his post-graduate degrees about the Yellowknife Gold Belt (YKGB)'s geology.

### GOLD-BEARING QUARTZ VEIN

Management reports intersecting "Gold-bearing quartz vein intersected in drill holes (see NI 43-101) and in recent underground workings."

More recently, Dr. Webb added

**"Once the weather warms again, we will restart mining by driving the ramp for an additional 120 m +/- and start development of 2 to 3 stopes. This is expected to supply enough feed to the mill for up to two years of production. Diamond drilling below this level should establish further targets for development."**

### WHO IS DR. DRW? A RELEVANT BIO:

Dr. Dave R. Webb, Ph.D., P.Geol., P.Eng. has over 40 years of experience, completed his M.Sc. and Ph.D. in Yellowknife. He discovered four gold deposits in Yellowknife, developed the largest gold resource reported in Yellowknife in the past 50 years subsequently taken to feasibility, and the largest granitoid-hosted gold deposit in the NWT. He acquired the Mon Property in the late 1980's from Cominco Ltd. and developed it into production in the 1990's. He recently obtained operating permits for mining, processing, and storage of tailings at the Mon Property.

Past production of 15,000 oz at 1 oz/ton, similar to Discovery Mine which produced 1 m oz. of gold from 1 m tons of ore over 19 years. The Mon was shut down in 1997 only due to low gold price, not lack of vein.

### SKIP A STEP

Now, with drill results confirming continuity of the vein... SXTY is 'on plan'... to proceed to production of bulk sampling to confirm historical grades of ~1 oz per tonne.

#### Infrastructure, Equipment & Manpower

- Mining and milling permits are in place.
- The Mon is the only newly-permitted gold mining operation in the NWT.
- Camp and equipment are in place.
- Proximity to Yellowknife - 45 km - 15 minutes by helicopter or float / ski plane
- Winter road access for heavy gear and bulk supplies.
- 2022 access road has been re-established, ready for transport.
- Additional fuel tank has been acquired, doubling storage capacity to 140,000 litres.
- Additional explosives have been acquired.
- Crews are being mobilized.
- Mill components are being acquired.







**“Just watch us.”** says the normally restrained Ron Handford, VP Corporate & Corporate Secretary.

Various promises made over the past two years... and kept. Bodes well for the outcome: Production, soon... Leap-frogging indeed.

**“The Company also has an option agreement to acquire a 100% interest in the highly**

**prospective and contiguous 2,102 hectare Hangstone Property adjoining the Mon Property to the East and South from an independent prospector. The Mon Property shear zone and VMS targets can be projected onto the Hangstone Property.”**

*Do your Due Diligence, of course. [Ed.]*

David O'Brien is the owner of **Int'l Mining Research CENTRE** which employs Media, Event and Online exposure, including **eNews News Release Reprints & eNews 3rd-Party Articles**. O'Brien also owns **W.I.T. Marketing Writing** an Ad Agency, and has been contributing articles to **TheProspectorNEWS.com**, on demand. He owns no shares in the above companies.

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- Similar to the regional 1m oz, 1 oz/ton gold Discovery Mine
- Crown pillar grades up to 688 g/t gold over 0.5 m; 98.8% met recoveries
- Further exploration potential for VMS and shear zone gold

Contact: Dave Webb, Ph.D., P.Geol., P.Eng., President & CEO

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# TAKING ADVANTAGE OF PERU'S MODERN DAY GOLD RUSH

By Jane Lockwood

**S**outh-eastern Peru has been undergoing a major gold rush since the early 2000's, rocketing to the top spot in terms of gold production in Latin America and coming in somewhere in the top 10 globally, depending on the year. However, estimates place the source of up to 38% of that gold in the hands of informal miners in just one small province: Madre de Dios. Here, artisanal mining for alluvial gold causes serious environmental problems, such as deforestation and mercury contamination, as well as social issues like trafficking and organised crime.

Gold mining boomed in Madre de Dios when two factors collided in 2008: the completion of the Inter-oceanic Highway providing access to the region and an elevated gold price. Deforestation has been tempered somewhat by the army being deployed to the region to shut down illegal mining and initiatives by government to set up co-operative mining efforts that include benefits to local communities and discourage the use of mercury.

One explorer that has seen the enormous potential in Peruvian gold is **Palamina (TSX-V:PA), (OTCQB:PLMNF)**. Palamina looked at the massive alluvial deposits of Madre de Dios and asked a less obvious but more pertinent question: 'where did that gold come from?' Alluvial gold deposits are eroded from solid rocks, then transported and deposited by the action of water or ice, so they must have a hard rock source nearby.

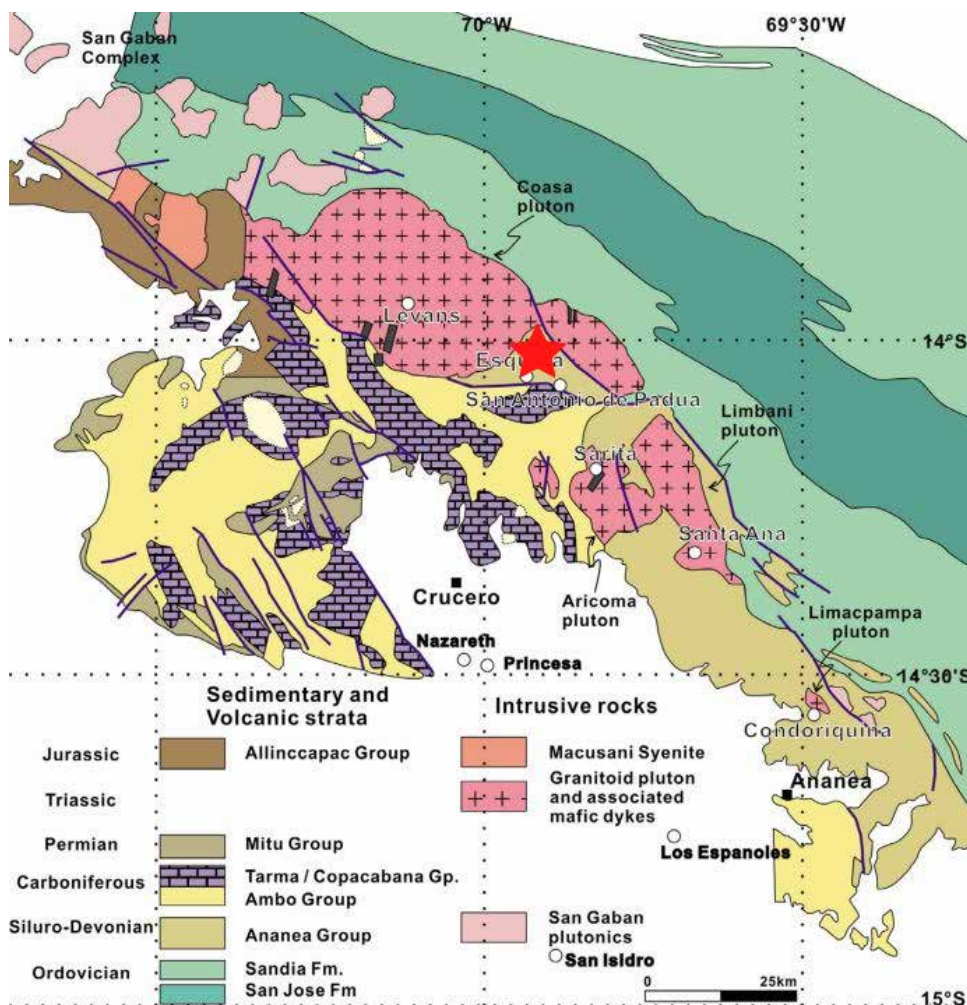
Having completed a significant staking program in 2017, Palamina has first mover advantage in the **Puno Orogenic Gold Belt (POGB)**, part of the Cordillera de Carabaya in the Andes. The POGB, and particularly its southern border with the Altiplano where Palamina's flagship Usicayos project sits, has already proven itself a significant source of the yellow metal. Contiguous to Usicayos lies **GoldMining's (TSX:GOLD), (NYSE:GLDG)** Crucero deposit, which in 2017 was assessed as having 2.14 Moz. indicated and inferred. Along the same

orogenic boundary to the west lies the Ollachea deposit, which it is estimated will produce over 875,000 oz. Au for **Minera IRL (CSE:MIRL), (BVL:MIRL)**; to the east is the Untuca mine, operated by Cori Puno SAC and producing 1,800 t/day; and of course there is the brutal La Rinconada, home of the highest permanent settlement in the world and, according to one perhaps wild estimate, producer of 1.4 Moz. of gold every year.

Despite these blessings, the POGB remains comprehensively under-explored, although Palamina is looking to change that with participation in five projects in the area. This includes a 19.5% equity interest in **Winshear Gold (TSX.V:WINS)** and a 2% NSR on their Gaban and Tinka

projects. Winshear's Gaban project sits over the intercontinental highway where the third hydro-electric dam in the POGB is under construction, and two new bridges over the river provide great infrastructure.

The Cordillera de Carabaya is part of the larger Eastern Cordillera of Peru, which has experienced at least three orogenic cycles. The varied sediments of the local Ananea and Ambo groups include weak, fine-grained rocks that can focus shearing and provide a pathway for gold-bearing fluids to travel through. Indeed, it is quartz veins and sulfides in these rock types that host the deposits in the region, and examples including visible gold are abundant at Usicayos. Additionally, a longstanding history



Geological map of a major part of the Puno Orogenic Gold Belt, showing the location of Palamina's Usicayos with a red star. Image adapted from Yang and Heo (2011) after Clark et al. (1990).





Visible gold in hand specimen from the Veta Zone at Usicayos

of subduction under the region and at least two significant episodes of magma intrusion demonstrate that the all-important fluids that mobilise orogenic gold have been present in the past.

Within the POGB, the mineralised footprint at the 14,600 hectare Usicayos project is second only to La Rinconada, covering 2.4km along strike and open at both ends. Encouragingly, known mineralised areas line up with magnetic highs from a heli-borne geophysical survey along an interpreted regional shear zone. The grades are there too; a grab sample from the Veta Zone at

Usicayos has returned 620 g/t Au, and channel sampling from the Veta NE and Cayos Zones has returned 1.3m of 90.3 g/t Au and 3m of 30.5 g/t Au respectively. On top of the promising geology, Palamina has the advantage of working with GoldSpot Discoveries, providing the locally experienced exploration team with access to the latest data-driven machine learning capabilities for discovery.

Palamina's maiden drilling campaign at Usicayos was paused in December of 2017 with the advent of the rainy season,

but the drill remains onsite and is scheduled to recommence in April 2022. Exploration during the rainy season has pivoted to the Lagos silver-copper project in the south of the Puno region, where drill permitting is well underway. In 2022 Palamina is expected to resume drilling at the Usicayos gold project and possibly see drilling on its Lagos silver-copper project, as well as on Winshear's Gaban gold project. The company's primary focus is to bear out the gold potential of its projects in the POGB and at Lagos through drill discovery.



Palamina has conducted thorough exploration groundwork prior to their end-2021 maiden drill campaign, including mapping, airborne geophysics, and rock, channel and trench sampling.



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# THE DIVERSITY OF PORPHYRY MINERALIZATION - A CASE STUDY

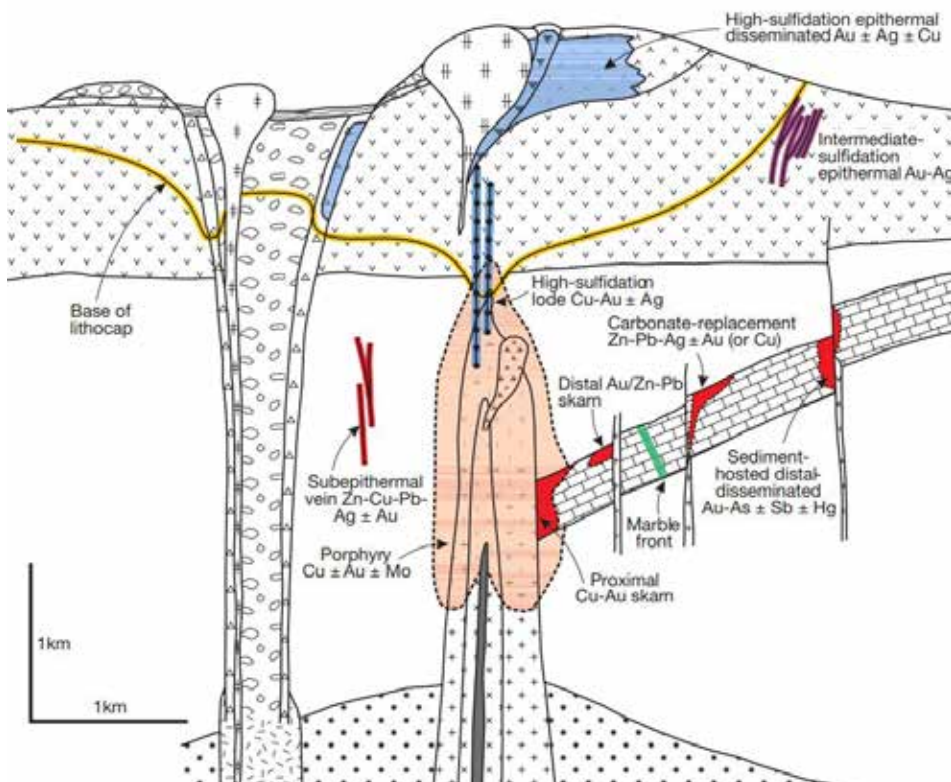
By Jane Lockwood

It's rather remarkable how a single geological process – in this case porphyry formation – can lead to such a diversity of mineralization and deposit styles. It's even more remarkable to find so many of them represented on a single property, but if such a thing were to be found, it would have to be in the Golden Triangle of British Columbia. Fortunately for the geology fans of the world, there is such a property: the flagship 2,600 km<sup>2</sup> Thorn project owned by **Brixton Metals (TSX-V:BBB), (OTCQB:BBBXF), (GR:8BX1)**. Looking over the abundant targets that the company has identified at Thorn is like taking a tour through the varying mineralization styles that the porphyry-forming process can spawn.

minerals (chlorite, muscovite and clays) are widespread throughout the property and are each concentrated in different zones, suggesting different styles of porphyritic alteration at various locations across the project. This was one of many indications to the exploration team that they were in a strong porphyry system, and that confidence certainly paid off in 2019 when drilling at the 1 km x 2 km Camp Creek target reached deep enough to encounter a blind porphyry.

Camp Creek had been a target since Brixton acquired the property in 2009 due to the intense epithermal-style alteration with associated high-sulfidation veins and breccias at the

mineralization over hundreds of metres. In a classic display of porphyritic alteration, calc-alkalic mineralization appeared in drill cores at Camp Creek from about 300-400m, progressing through geochemically distinct phases with increasing depth. In addition to the bulk-tonnage style copper encountered in the deposit, a 1.85m interval drilled at the end of 2021 returned 89.3 g/t gold; an unusual feature near the core of a porphyry and certainly an exciting development for the company. The strongest mineralization discovered at Camp Creek to date occurs at the deepest levels of the drill holes, indicating that there could still be more and better mineralization at even greater depths.



A schematic showing the spatial relationships between typical porphyry and associated deposit type, many of which can be seen at the Thorn property. Figure from Sillitoe, R.H., 2010, Porphyry Copper Systems. *Economic Geology* 2010; 105 (1): 3–41.

Data from the ASTER instrument aboard the Terra satellite, acquired in 2020, shows that typical porphyry alteration

surface, but in 2019 Brixton intersected the heart of the veining system, finding copper-gold-silver-molybdenum

In addition to the central part of the Camp Creek corridor, the target also contains three satellite zones with different mineralization styles. Both the Talisker and Glenfiddich zones display high-sulfidation veining, with Glenfiddich also containing silica-flooded breccias with vuggy textures and sulfides. Drilling at Glenfiddich has returned promising results for high Cu-Ag-Au mineralization, and at Talisker, which displays disseminated and vein-hosted pyrites and strong sericite alteration, one hole returned nearly 50m of promising Au-Cu-Ag values. By contrast, the Oban zone is a polymetallic diatreme breccia-hosted deposit with clasts composed of quartz diorite porphyry, and an almost 550m intersection there returned exciting Au-Ag-Cu-Pb-Zn values. All these alteration styles are consistent with their locations above and around a porphyry system.

Another high-priority target is Trapper, which covers a geochemical footprint of 4 km x 1.5 km. Mineralization here is very different from Camp Creek, occurring in an epithermal rather than porphyritic style. The focus is on high-grade gold occurrences, with rock samples returning up to 135 g/t Au, lying within a broad zone of lower grades, such as the 139m of 2.14 g/t Au that was drilled in 2021. Mineralization here





Typical porphyry-style mineralisation from drilling at the Camp Creek target.

occurs in a variety of styles. Seven drill cores have displayed visible gold, and gold is also known to occur in base metal veins, quartz stockworks, sulphosalt-pyrite veinlets and as disseminations in a closely-associated diorite intrusive. Clearly, this is an epithermal deposit distal from the core of the porphyry. Like Camp Creek, Trapper will see aggressive drilling in 2022, with Brixton planning 15,000 – 20,000m over the property, plus

the collection of up to 8,000 soil and rock samples and further structural mapping.

Camp Creek and Trapper are just two out of fourteen targets that have been identified on the Thorn property; other highlights include the Outlaw sediment-hosted gold target and the near-surface Metla gold-copper target that was acquired in 2020. Results to date have given Brixton ample reason for optimism; for example, of the top 20 copper intercepts drilled around the world in the last

three years, Thorn has provided no fewer than three of them.

The project in its current form has been an exercise in consolidation by Brixton, with the company carefully acquiring claims along an 80km mineralised megatrend over several years. They also have the advantage of decades of previous work over certain parts of the property; exploration started in 1959 and over the past 35 years over 57,000 metres have been drilled by various operators. It's easy to see why this property has caught the eye of so many over the years; even in a region replete with remarkable porphyries and associated deposits, Thorn truly stands out as a project with special potential.



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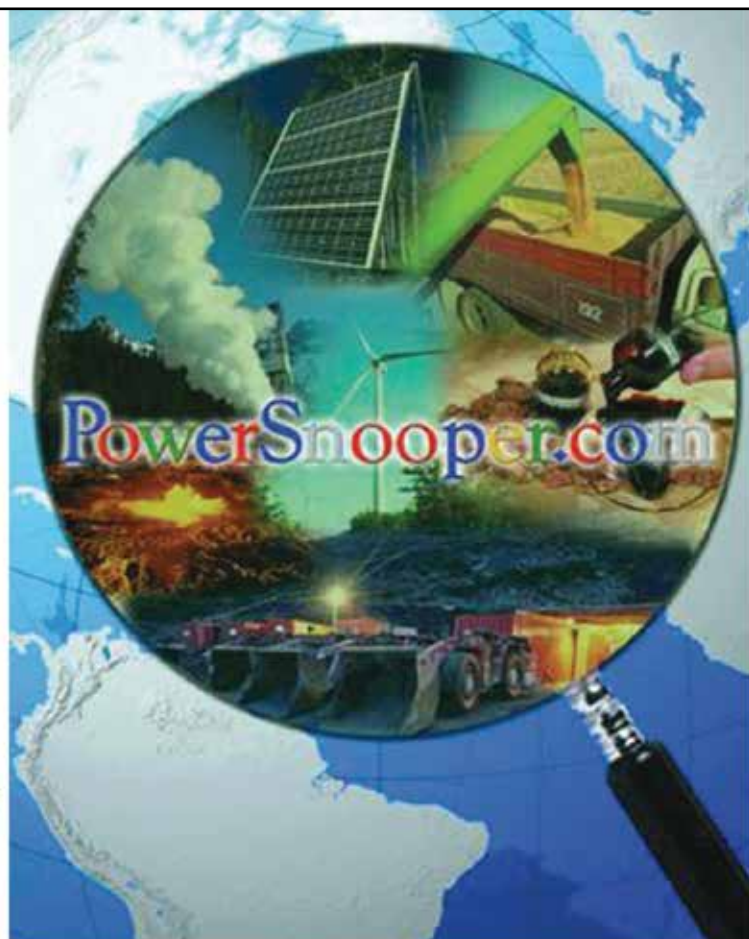
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# THE GOLDEN TRIANGLE. SO MUCH MORE THAN GOLD

By Jane Lockwood

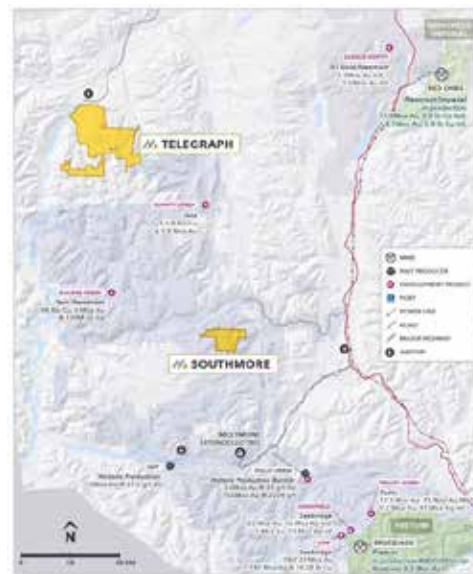
It might be called the Golden Triangle, but as any mining enthusiast in British Columbia knows, there's more than just gold in those mountains. For a start, those willing to look beyond the high-grade but generally smaller epithermal vein-hosted gold deposits will find plenty of bulk-tonnage copper porphyries that still offer gold on the side. So why are BC's porphyries special?

Porphyries and their associated epithermal systems form when one tectonic plate is subducting under another, producing a volcanic arc on the overriding plate. In this environment, magma is generated in a multi-stage melting process and moves up from the shallow mantle to the crust, where it eventually interacts with groundwater as well as releasing its own fluids. It is this circulating fluid that collects metals from deep in the system and transports them into shallower areas. In the case of the Golden Triangle, the resultant porphyry deposits were largely formed when the Stikinia Terrane, a volcanic arc, collided with the bulk of the ancestral North American continent somewhere around 200 million years ago.

Many such regions exist on Earth, and they are often economically valuable;

think of the massive copper porphyry deposits of the Andes, for example. But the exploration frenzy in the Golden Triangle over the last decade suggests there must be something extra special there. One possible factor could hark back to the formation of the deposits; while superheated water might circulate in a typical porphyry system for up to one million years, it's thought that the Golden Triangle system remained active for up to ten million years. Perhaps this explains why the region hosts not just copper, gold and some molybdenum porphyry deposits, but also base metals including lead and zinc, volcanic massive sulfides, and regions of bonanza-grade silver. The Triangle really ought to be just as famous for the diversity of its metal deposits as it is for its gold.

That diversity is neatly encapsulated by **Mountain Boy Minerals (TSX-V:MTB), (OTCQB:MBYMF)**, who must be one of the most active junior explorers in British Columbia, if not all of Canada. Instead of putting all their eggs in the basket of a single project like some juniors do, or else sitting on a bundle of idle properties that are just waiting for a joint venture partner to materialise, Mountain Boy has cultivated a stable of seven properties in BC and is actively progressing most of them. While they

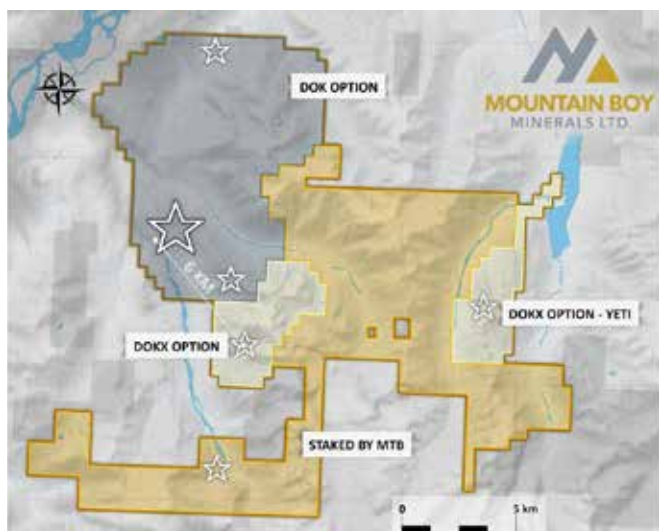


The location of Mountain Boy's Telegraph location relative to famous Golden Triangle deposits like Eskay Creek, Brucejack and Galore Creek.

have a laser-sharp regional focus on the Golden Triangle, their projects span deposit types from classic Triangle epithermal zones at the flagship American Creek to the polymetallic curiosity of Theia. But with the copper price recently touching all-time highs, it's the company's May 2021 acquisition of the copper-gold Telegraph project that is currently looking prescient.

Telegraph's existence is the direct result of the thorough and rigorous exploration strategy employed by Mountain Boy's exploration team. The company decided to consolidate it through staking and acquisition in after synthesizing results from the piecemeal work that has occurred on patches of the property in the past. The result is a 23,000 hectare holding that has a wealth of historical data to analyse, and those results provide plenty of evidence of large-scale copper-gold potential.

A perfect example of the exploration advantage provided by the regional scale of Telegraph is its DOK prospect, the most advanced on the property, and the adjacent DOK-35 prospect. These were historically explored by separate companies, who were



Getting an overview of historically separated prospects has allowed Mountain Boy to identify a 6-km trend of Cu-Au soil anomalies and mineralisation.



Exploration in the Golden Triangle requires the most intrepid adventurers.

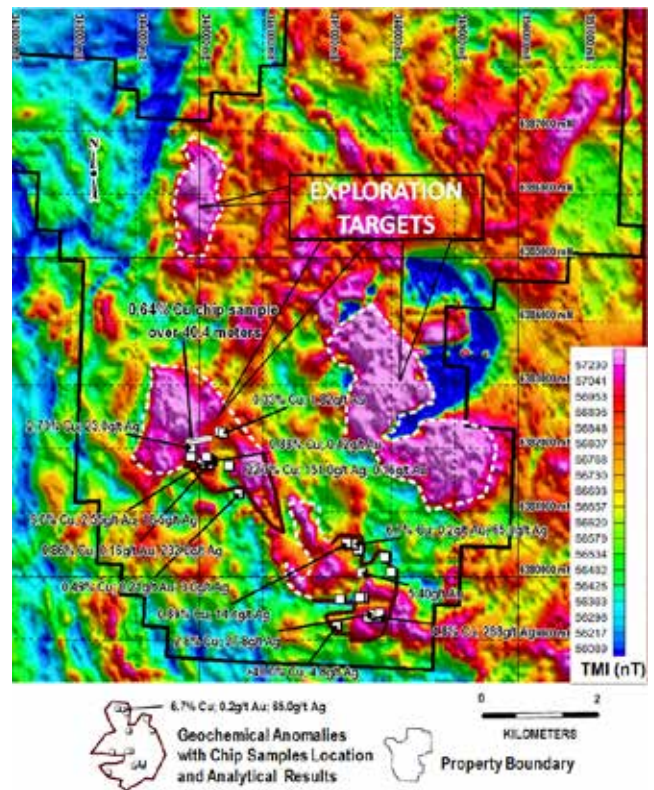


Those familiar with Golden Triangle geology will recognize the names associated with Telegraph. The Upper Triassic Stuhini Group on the property unconformably underlies the Jurassic Hazelton Group, a contact locally known as the “red line” that marks an era when many of British Columbia’s deposits formed. The property is also intruded by numerous plutons, including the Copper Mountain Suite, which is associated with the nearby Galore Creek, and the Texas Creek Suite, associated with Brucejack.

It's not just by analogy that Telegraph shows promise, however. Ground truthing of historical results followed by more detailed exploration was carried out at the end of 2021, with excellent results. The footprint of

the copper-gold mineralization and porphyry alterations was extended and three new targets identified, and 30% of the 141 surface samples collected returned over 0.5% copper, with some grading up to 17.9% Cu. In addition, 2011 and 2018 airborne geophysics show two anomalies co-incident with large Cu-Au-Mo-Ag-in-soil anomalies, and more in unexplored areas of the property.

Altogether, Mountain Boy are certainly showing that they know how to pick projects in the Golden Triangle, whether they contain unusual mineralization or, like Telegraph, deposits that are classics of the region.




*Previous geophysical data shows two anomalies overlapping with and potentially extending known mineralization, and others that will provide targets for future exploration.*

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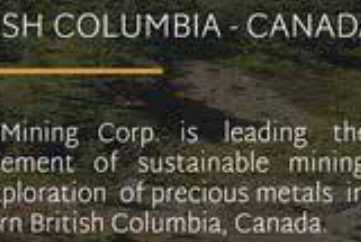
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# LITHIUM-ION BATTERY CATHODE RECYCLING. BATTERIES THAT LAST FOREVER

By Christian Elferink

## THE LITHIUM-ION RECYCLING MARKET AND ITS ENVIRONMENTAL IMPACT

A comprehensive research report by Market Research Future on lithium-ion Battery Recycling Marketing shows that this market is projected to be worth US\$24.31 billion by the year 2030. Their calculations imply a compounded annual growth rate of 21.43% during 2022 – 2030. The market for recycling lithium-ion batteries is snowballing mainly due to the extreme increase in production and sales of electric vehicles.

With increasing sales of electric vehicles comes an increased production of lithium-ion batteries and the raw materials used to produce these batteries. Due to increased demand, materials such as lithium, nickel, manganese, and cobalt have seen significant price increases over the past years. These critical battery materials are disproportionately scattered worldwide and faced with geopolitical concerns that further magnify supply chain problems. Besides that, our reliance on continuous mining of the natural resources needed for lithium-ion batteries puts additional pressure on the environment.

Disposing of used lithium-ion batteries is currently done by complex processing methods that offer inefficient recovery rates.

**American Manganese Inc. (TSX-V: AMY), (OTC: AMYZF)** is poised to offer a solution to the problems mentioned in the rapidly growing lithium-recycling market. American Manganese is a critical metals company focused on recycling lithium-ion batteries with the RecycLiCo™ Patented Process. The process provides high extraction of cathode metals, such as lithium, cobalt, nickel, manganese, and aluminium, at high purity, with minimal processing steps. American Manganese aims to commercialize its breakthrough RecycLiCo™ Patented Process and become an industry leader in recycling cathode materials from spent lithium-ion batteries.

The RecycLiCo™ Patented Process offers a closed-loop and environmentally friendly recycling solution for battery production scrap and end-of-life lithium-ion batteries, with over 99% extraction and high purity of materials such as lithium, cobalt, nickel, manganese, and aluminium.

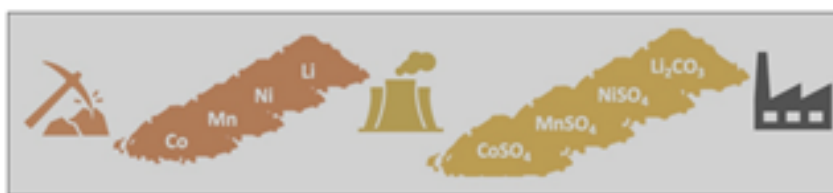
With the growing demand for electric vehicles and portable electronics, recycling lithium-ion batteries will be a certainty in our green future.

## THE ROAD TO COMMERCIALIZATION

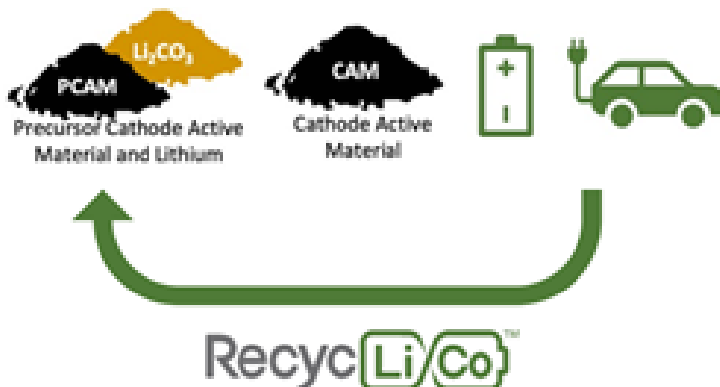
At the beginning of 2021, American Manganese Inc. signed a contract with Kemetco Research, a leading metallurgical laboratory, for \$2.7 million to develop a 500kg/day demonstration recycling plant incorporating the RecycLiCo™ process. The purpose of the demonstration plant is to provide a tool for licensing or joint developing RecycLiCo™ with potential industry partners.

On February 17, the Company announced that the recycling equipment is in place. The commissioning schedule is on pace with the work of mounting tank reactors, connecting ventilation system and wiring power to equipment still to be completed. American Manganese has received 3,500kg of lithium-ion battery cathode scrap that will be used as initial feedstock for the 500kg/day demonstration plant. The cathode scrap is a lithium-nickel-manganese-cobalt composition that is representative of the modern cathode materials used in electric vehicle batteries and potential near-term feedstock supplies. The cathode scrap feedstock is to be used to validate the demonstration plant's preliminary real-world continuous operating efficiencies and is expected to generate a significant amount of recycled lithium, nickel, manganese, and cobalt products for potential material qualification with interested third parties.

With the gathered data from the demonstration plant, American Manganese, in cooperation with Kemetco Research, intends to complete a detailed engineering design and cost assessment of a commercial plant with potential strategic partners.



**Reduce supply chain complexity from conventional mining process**





The Company aims to commercialize its patented recycling process as a technology partner via a joint development partnership or licensing agreement.

"I'm extremely pleased with the great progress in our demonstration plant," said Larry Reaugh, President and CEO of American Manganese. "It's a testament to everyone on our team working

tirelessly to ensure the success of the project. Our structured approach from initial concept, lab testing, piloting, and modeling gives us confidence in our scaled-up selection of equipment and planned testing procedures."

## Road to Commercialization



### Pilot Plant / R&D

- Tested multiple samples of black mass and cathode scrap from third parties
- Proven high purity lithium and PCAM production

### Demonstration Plant

- Completed mass and energy balance modelling
- Major equipment on-route with operation start-up expected in early 2022
- 500 kg/day cathode material processing capacity

### Commercial Plant

- Licensing and Joint Venture business model (Technology Partner)



3D Rendering of the RecycLiCo Demonstration Plant

TICKER : TSX-V : AMY | OTCQB : AMYZF | FSE : 2AM

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# WELCOME MESSAGE FROM PDAC PRESIDENT

## PDAC 2022 CONVENTION REGISTRATION NOW ON

While our passion for mineral exploration and mining has not changed, some things in the world most certainly have—including the dates and appearance of the PDAC Convention, which is celebrating its 90<sup>th</sup> anniversary in 2022.

The dedicated team at PDAC has flexed its muscles yet again. By listening to feedback from stakeholders and embracing innovation, the PDAC 2022 Convention will be offered in person in Toronto from June 13 to 15, and online from June 28 to 29. This is the first time that a hybrid event is being offered at PDAC. I am proud to be President of the Association during this time of unprecedented global challenge and am excited to deliver a successful event to mark this important milestone anniversary.

Over the past year, the international spotlight continued to shine on our sector. The role of mining in the transition to a low carbon future remains dominant. Canada is uniquely positioned in this conversation as a leader in exploration and mining practices, as well its ability to deliver many of the minerals and metals required to make the shift.

The COVID-19 pandemic showcased once more the importance of precious metals as gold prices soared to record heights. It also demonstrated the significant social and economic impacts that exploration and mining can have on communities around the world, where we have seen the industry provide much needed support where it may otherwise not exist.

Essential Programming and Short Courses at PDAC 2022 reflect these and other trends taking shape throughout the sector. The expanded Keynote Program provides a platform for experts to present on commodities, the mineral outlook, innovation and new discoveries. The in person convention also marks the return of exciting networking opportunities that have kept attendees returning to Toronto for decades.

For those joining in person, health, safety and wellness remain our top priority and we will continue following Canadian and local government directives. We understand that these requirements may evolve and will ensure attendees are kept informed of new developments.

No matter how you connect, in person or online, the PDAC 2022 Convention is where the world's mineral industry meets. I look forward to welcoming you there (in a much warmer month).

Visit [www.pdac.ca/convention](http://www.pdac.ca/convention) for the latest news and information.

**Alex Christopher,**  
PDAC President



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