

# Ucore Rare Metals is building its rare earths Field of Dreams with RapidSX

written by InvestorNews | September 15, 2022

To misquote the famous line in the 1989 movie '[Field of Dreams](#)', "if you build it, they will come" (the actual line from the movie is he will come – referring either to Kevin Costner's character's father or shoeless Joe Jackson or perhaps both). Making a giant leap from that to the world we find ourselves in today, where 80% of the world's rare earth resources are controlled by China, if you build it, or at least can process the raw materials into rare earth oxides (REOs), then arguably everyone will come. OK, maybe that was a bad segue but you're just going to have to live with it. The point is, there are billions of dollars being invested over the next couple of years on EV battery manufacturing facilities in North America and the U.S. has recently implemented legislation (the [Inflation Reduction Act](#)), which requires that 40% of battery components be sourced from factories in the U.S. or its free trade agreement partners, and that Chinese components and minerals be phased out beginning in 2024. On-shoring is the name of the game as we transition to a lower carbon future.

There are numerous rare earth explorers pursuing processing capabilities but perhaps no one is closer to commissioning than [Ucore Rare Metals Inc.](#) (TSXV: UCU | OTCQX: UURAF). Ucore is focused on rare- and critical-metals resources, extraction, beneficiation, and separation technologies with the potential for production, growth, and scalability. Ucore has an effective 100% ownership stake in the [Bokan-Dotson Ridge Rare Earth Element Project](#) in Southeast Alaska. Ucore's vision includes

disrupting the People's Republic of China's control of the U.S. rare earths supply chain through the near-term development of heavy and light rare-earth processing facilities – including the Alaska Strategic Metals Complex in Southeast Alaska. And to that end Innovation Metals Corp., a wholly owned Ucore subsidiary, has developed the RapidSX separation technology resulting in the production of commercial-grade, separated rare earth oxides at the pilot scale.

Sounds promising but what exactly is [RapidSX](#)? The process combines the time-proven chemistry of conventional solvent extraction (SX) with a new column-based platform, which significantly reduces time to completion and plant footprint, as well as potentially lowering capital and operating costs. SX is the international rare earth industry's standard commercial separation technology and is currently used by 100% of all rare earth producers worldwide for bulk commercial separation of both heavy and light rare earths. Utilizing similar chemistry to conventional SX, RapidSX is not a new technology but represents a significant improvement on the well-established, well-understood, proven conventional SX separation technology preferred by rare earth producers. As an investor, I prefer disruption of existing technology versus reinventing the wheel as it is typically more capital efficient and quicker to market, unless of course, it's cold fusion type of disruption, in which case I'm all ears.

As for the progress of RapidSX, [Ucore announced](#) in mid-July that it had upscaled its rare earth Demonstration Plant capabilities and streamlined the RapidSX commercial deployment plan. In early 2022 Ucore received very positive results from the [independent RapidSX technology evaluation](#), including the conclusion that a RapidSX production plant can potentially have a 2/3rds smaller footprint than a conventional SX facility with the same throughput. The team then received buy-in from all stakeholders

to expand the design and construction of the Demo Plant. Ucore's enhanced Demo Plant will be able to process: tens of tonnes of mixed rare earth concentrate on a per annum basis; many feedstock sources, including planned light and heavy rare earth element feedstocks for the Strategic Metals Complexes; and all RapidSX splits required to produce individual praseodymium, neodymium, terbium, and dysprosium. Ucore has planned product qualification trials in Q4-2022 for prospective North American metal/alloy makers and original equipment manufacturers (OEMs).

All this is only one aspect of Ucore's business, they are also a rare earth explorer with the advanced Bokan-Dotson Ridge rare earth deposit. Highlights at Bokan include a [NI 43-101 Preliminary Economic Assessment](#), with a resource estimate that remains open down-dip and on-strike with further drilling planned. The project can be "near shovel ready" for construction in less than 30 months after receipt of the next stage of development funding. And the Company boasts that Bokan is the highest grade NI 43-101 HREE resource in the U.S. But we'll save digging further into the details on Bokan for another day.

Bottom line, Ucore is very close to churning out rare earth oxide material at its Demonstration Plant which could lead to supply offtake agreements with EV manufacturers and/or other downstream customers. This could be huge for Ucore in light of the fact that on-shoring is going to be a high priority for the foreseeable future. With a market cap of C\$34 million, there could be a bright future for Ucore if all the pieces fall into place.

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# Imperial Mining Group's Scandium-REE Preliminary Economic Assessment by the numbers

written by InvestorNews | September 15, 2022

Last week [Imperial Mining Group Ltd.](#) (TSXV: IPG | OTCQB: IMPNF) released the results of a [Preliminary Economic Assessment](#) (PEA). The [results are impressive](#) with a projected 25-year mine life for its Crater Lake TG Zone Scandium-Rare Earth Element (Sc-REE) deposit 200 km NE of Schefferville, Quebec. Of particular note is Imperial Mining's CEO Peter Cashin, who has been in mining for decades and has been involved in rare earths and scandium for over a decade which puts him in a strong position to understand the idiosyncrasies of these critical materials.

Scandium is an element that has huge potential in automotive, aerospace, military, and applications where weight is critical without sacrificing other properties. Scandium has the ability, when added in < 1% levels to aluminum, to produce a metal that is one-third the weight of steel but has the strength of steel. The main scandium production is in China and Russia, and major companies are looking for a reliable, long-term supply from a favorable jurisdiction before committing to a design using scandium-aluminum alloy. Scandium can be welded which is of interest to aircraft companies as it has been said that eliminating the rivets which is the current practice would reduce the weight of a plane by as much as 20%. The challenge is designing a new airframe can take up to a decade. Therefore other applications are needed near term to generate cash flow in the early stages of a project. A new car can take 2-3 years to

produce from scratch but with the drive to EV vehicles where weight is a major consideration, this is a key area for product development. Being in Quebec, Imperial is well situated to work with the aluminum smelters in the province.

According to Imperial Mining's PEA, gross revenues projected are CA\$15.2 billion with gross earnings about 50% at CA\$6.25 billion. The NPV is just under CA\$3 billion at a 10% discount rate and an IRR (after-tax) of 32.8%. The initial CAPEX is projected at CA\$870.9 million with a payback of 2.5 years. Impressive numbers.

Regarding the scandium itself, the drill results have shown grades that rate among the highest globally, if not the highest.

The mine is an open-pit design, which will minimize costs, and the concentration phase would be done on-site with final processing being planned to take place in Sept-Iles. The strategy is to produce a master Sc-Al alloy in Sept-Iles along with a REE concentrate. The other notable calculation is Imperial Mining uses US\$1,500/kg for Sc203 which is significantly lower than other PEAs for scandium in the marketplace. In addition, the Sc(2%)-Al alloy is discounted by 40% from the US Geological Survey 5-year trailing average, which is another conservative approach and refreshing to see instead of reporting extreme numbers which would be difficult to defend.

As noted earlier, Imperial Mining plans to produce a rare earth concentrate. This is priced at a 70% discount to market prices in March 2022, which is realistic as the main target customer would be China, which is currently buying concentrate from MP Materials out of California. This discount is in keeping with how the Chinese would calculate the value, and even then the lanthanum would not be a significant contributor. The other key point of this revenue calculation was that it is based only on the 4 key magnetic elements plus lanthanum, which is realistic

as the magnetic elements are where the main value is in all REE deposits globally. It is nice to see a company not running economics on separated REEs and saying it can sell everything it produces, which is not possible. This concentrate would help defray the scandium OPEX to a certain degree.

Overall, scandium is a situation of build it and they will come. The full report should be available by end of July.

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## Mark Chalmers and Constantine Karayannopoulos on working together to supply rare earths magnets

written by InvestorNews | September 15, 2022

In this InvestorIntel PDAC 2022 Panel on “Rare Earths, Sustainability & Meeting the EV Market Demand”, host Tracy Weslosky is joined by [Energy Fuels Inc.](#) (NYSE American: UUUU | TSX: EFR) President and CEO Mark Chalmers and [Neo Performance Materials Inc.](#) (TSX: NEO) President, CEO and Director Constantine Karayannopoulos, to talk about their unique business relationship and the challenges and opportunities of getting rare earths magnets to market.

In the interview, which can also be viewed in full on the InvestorIntel YouTube channel ([click here](#)), Mark talks about the unique relationship between Energy Fuels and Neo Performance Materials to integrate the rare earths process and meet the

increasing world demand for providers of EV materials from outside of China. Constantine describes the moment when he and Mark “realized that between the two of us we had all the pieces of the puzzle and that we could put together a very full supply chain.”

Constantine goes on to discuss how Neo Performance Materials works with Energy Fuels in Utah, which “takes out the uranium for the uranium business for his customers and recovers the rare earths in a way that works for us,” separating the rare earth elements, turning them into metals alloys and finally the magnets needed by the EV industry.

Mark says that the relationship between the two companies work not only because they each have something that the other needs, but because “we are doers, not promoters. We’re trying to accomplish big things by actually doing it on the ground.” With increasing demand from European EV automakers, Mark goes on to say “we’re looking at being a world significant integrated supplier of rare earth products from the beginning to the end.”

To access the full InvestorIntel interview, [click here](#)

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### **About Energy Fuels Inc.:**

Energy Fuels is a leading U.S.-based uranium mining company, supplying  $U_3O_8$  to major nuclear utilities. Energy Fuels also produces vanadium from certain of its projects, as market conditions warrant, and is ramping up commercial-scale production of rare earth element (“**REE**”) carbonate. Its corporate offices are in Lakewood, Colorado, near Denver, and all its assets and employees are in the United States. Energy Fuels holds three of America’s key uranium production centers:

the White Mesa Mill in Utah, the Nichols Ranch in-situ recovery (“**ISR**”) Project in Wyoming, and the Alta Mesa ISR Project in Texas. The White Mesa Mill is the only conventional uranium mill operating in the U.S. today, has a licensed capacity of over 8 million pounds of  $U_3O_8$  per year, and has the ability to recycle alternate feed materials from third parties, to produce vanadium when market conditions warrant, and to produce REE carbonate from various uranium-bearing ores. Energy Fuels is also evaluating the potential to recover medical isotopes for use in targeted alpha therapy cancer treatments. The Nichols Ranch ISR Project is on standby and has a licensed capacity of 2 million pounds of  $U_3O_8$  per year. The Alta Mesa ISR Project is also on standby and has a licensed capacity of 1.5 million pounds of  $U_3O_8$  per year. In addition to the above production facilities, Energy Fuels also has one of the largest SK-1300/NI 43-101 compliant uranium resource portfolios in the U.S. and several uranium and uranium/vanadium mining projects on standby and in various stages of permitting and development.

To learn more about Energy Fuels Inc., [click here](#)

### **About Neo Performance Materials Inc.**

Neo manufactures the building blocks of many modern technologies that enhance efficiency and sustainability. Neo’s advanced industrial materials – magnetic powders and magnets, specialty chemicals, metals, and alloys – are critical to the performance of many everyday products and emerging technologies. Neo’s products help to deliver the technologies of tomorrow to consumers today. The business of Neo is organized along three segments: Magnequench, Chemicals & Oxides and Rare Metals. Neo is headquartered in Toronto, Ontario, Canada; with corporate offices in Greenwood Village, Colorado, US; Singapore; and Beijing, China. Neo operates globally with sales, research and development, and production facilities and offices across 10

countries: Japan, China, Thailand, Estonia, Singapore, Germany, United Kingdom, Canada, United States, and South Korea.

To learn more about Neo Performance Materials Inc., [click here](#)

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## Frederick Kozak of Appia Rare Earths & Uranium talks about new REE discoveries at Alces Lake

written by InvestorNews | September 15, 2022

In this InvestorIntel interview with host Tracy Weslosky, [Appia Rare Earths & Uranium Corp.](#) (CSE: API | OTCQB: APAAF) President Frederick Kozak talks about [the discovery](#) of a significant new mineralized zone at its Alces Lake rare earths property.

In the interview, which can also be viewed in full on the InvestorIntel YouTube channel ([click here](#)), Frederick discusses how Appia's drill program identified the continuity of shallow high-grade REE mineralization at their WRCB Area with a strike length of approximately 100 metres and consistently strong assay values. The new discovery of the massive AMP Zone has revealed it is large and continuous across all of the WRCB area and open along strike. Frederick also tells InvestorIntel that Appia is currently in the middle of the largest ever drilling program at its Alces Lake property, as well as on "another project that's a kilometer and a half away that looks like something similar to

the AMP Zone but much, much thicker...”

Frederick also talks about Appia’s five uranium projects and their upcoming appearance at PDAC.

To access the full InvestorIntel interview, [click here](#)

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### **About Appia Rare Earths & Uranium Corp.**

Appia is a Canadian publicly-listed company in the rare earth element and uranium sectors. The Company is currently focusing on delineating high-grade critical rare earth elements and gallium on the Alces Lake property, as well as exploring for high-grade uranium in the prolific Athabasca Basin on its Otherside, Loranger, North Wollaston, and Eastside properties. The Company holds the surface rights to exploration for 105,026 hectares (259,525 acres) in Saskatchewan. The Company also has a 100% interest in 12,545 hectares (31,000 acres), with rare earth element and uranium deposits over five mineralized zones in the Elliot Lake Camp, Ontario.

To learn more about Appia Rare Earths & Uranium Corp., [click here](#)

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# **Lynas Continues Its Reign**

# Under Amanda The Great

written by Tracy Weslosky | September 15, 2022

Look online, and you will discover that while [Lynas Rare Earths Ltd.](#) (ASX: LYC) is covered by 9 research companies, it is impossible to find one PDF Equity Research Report online. For Australian-listed companies, sometimes they publish the reports on their website; unfortunately, not for Lynas.

Dig deeper online and you may see a [headline](#) about whether Lynas has too much debt... these conclusions are in my humble opinion quite wrong, and underestimate this rare earths' ruler outside of China, Amanda Lacaze.

I ran my conclusions by a semi-retired analyst, who requested anonymity and wrote me back promptly in agreement: "Saw their balance sheet and they are running just over 1x debt: cash flow and their cash flow is strong based on growing sales and commodity prices."

The media loves to tout Chinese control of rare earths, but it is a woman with an iron fist that rules the rare earths world. Proud of how she likes to watch the pennies, it is unquestionably the reason why she has held the role as a Non-Executive Director for ING Bank Australia Ltd. for over 11 years.

Now let's start with some prenuptial notes on Lynas, before you decide to make a commitment to this industry giant.

[Lynas Rare Earths Ltd.](#) is listed on the Australian Securities Exchange (ASX: LYC). The company also has a sponsored Level 1 American Depositary Receipt (ADR) program through the Bank of New York Mellon (Code: LYSDY). On June 6 (Australia), the shares closed at AUD\$ 9.35. There 902.4 million shares outstanding,

giving the company a market capitalization of approximately AUD\$8.4 billion (US\$6.1 billion. At December 31, 2021, Lynas reported six month results including AUD\$741.7 million positive working capital (including AUD\$674 of cash and short term deposits) and AUD\$156 million long term debt. Cash and short term deposits increased to AUD\$768.4 at March 31, 2022.

Lynas' quarter ended March 31, 2022, had the following highlights:

- All necessary approvals received for the Kalgoorlie Rare Earth Processing Facility (Australia based processing facility)
- Site clearing of the Kalgoorlie facility location is complete
- Delivery of major equipment to Kalgoorlie site with foundation and building work underway
- Kalgoorlie should be on track as part of the company's 2025 Foundation Project program
- Planning is underway for the US Rare Earths Processing Facility including contracts signed with the US Department of Defense
- Record quarter for operations including:
  - Sales revenue of AUD\$ 327.2 million (AUD\$ 202.7 million previous quarter)
  - Sales receipts of AUD\$ 262 million (AUD\$151 million previous quarter)
  - Total REO production of 4,945 tonnes (4,209 tonnes previous quarter)
  - NdPr production of 1,687 tonnes (1,359 tonnes previous quarter)
- Lynas noted quarterly price strength for NdPr contributed to record financial results
- Automotive demand for rare earths "remains strong"
- Exploration drilling under the existing Mt. Weld

extraction pit revealed continuous rare earth element mineralization along 1,020 metres of drill core. Further targeted exploration is to be conducted “with the goal of meeting accelerating customer demand”.

- The company targets to be operating four sites in three countries with global sales in 2025

Having heard Amanda speak on several occasions in her early role as Managing Director nearly eight years ago, I recall believing that her reign would be short-lived. Her valiant commitment to the bottom line above all else seemed conservative and backward compared to the charismatic marketing styles of other leaders I quite like in the market. Commenting that weekly meetings would necessitate accountability for every dime spent, seemed dismal and droll to me, it seems, however, she was quite right.

As down winds from the recession are upon us, or gales of a correction are indeed in full force, I look to the critical materials sector for which many experts harbor no fears. And with the demand for rare earths continuing to exceed supply, it seems that the noble Australian woman whose fearless tactics took me by surprise is now the one championing it all.

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## **Mark Chalmers of Energy Fuels talks about acquiring a major rare earths project in Brazil**

written by InvestorNews | September 15, 2022

In this InvestorIntel interview with host Jack Lifton, [Energy](#)

[Fuels Inc.](#)’s (NYSE American: UUUU | TSX: EFR) President and CEO Mark Chalmers talks about returning from Brazil with a signed agreement for the acquisition of the major rare earths Bahia Project.

In the interview, which can also be viewed in full on the InvestorIntel YouTube channel ([click here](#)), Mark discusses the 60 square mile acquisition of the very high quality heavy mineral sand deposit by Energy Fuels north of Rio de Janeiro. “This is a big step for our company,” Mark explained, “as it could supply ultimately because of its size between 3,000 to 10,000 tons a year of monazite sand.” This could translate into between “1500 to 5 000 tons of REO per year,” he continued, making it “important as a base load for the White Mesa mill.”

Mark also talks about how the Bahia Project, expected to close in 90 days subject to due diligence, is a step towards Energy Fuels’ vertical integration plan for producing rare earth products, which is already shipping high purity mixed rare earth carbonate from its White Mesa mill in Utah to customers. He also discussed a recent announcement that Energy Fuels has signed three material contracts with two major U.S. nuclear utilities to supply uranium products.

To access the full InvestorIntel interview, [click here](#)

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corporate offices are in Lakewood, Colorado, near Denver, and all its assets and employees are in the United States. Energy Fuels holds three of America's key uranium production centers: the White Mesa Mill in Utah, the Nichols Ranch in-situ recovery ("ISR") Project in Wyoming, and the Alta Mesa ISR Project in Texas. The White Mesa Mill is the only conventional uranium mill operating in the U.S. today, has a licensed capacity of over 8 million pounds of  $U_3O_8$  per year, and has the ability to recycle alternate feed materials from third parties, to produce vanadium when market conditions warrant, and to produce REE carbonate from various uranium-bearing ores. Energy Fuels is also evaluating the potential to recover medical isotopes for use in targeted alpha therapy cancer treatments. The Nichols Ranch ISR Project is on standby and has a licensed capacity of 2 million pounds of  $U_3O_8$  per year. The Alta Mesa ISR Project is also on standby and has a licensed capacity of 1.5 million pounds of  $U_3O_8$  per year. In addition to the above production facilities, Energy Fuels also has one of the largest SK-1300/NI 43-101 compliant uranium resource portfolios in the U.S. and several uranium and uranium/vanadium mining projects on standby and in various stages of permitting and development.

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## Critical Minerals Corner: Jack

# Lifton & Christopher Ecclestone on the Rare Earths Market

written by InvestorNews | September 15, 2022

In this episode of the **Critical Minerals Corner**, Tracy Weslosky is joined by Critical Minerals industry expert and InvestorIntel Editor in Chief Jack Lifton and Christopher Ecclestone, Principal and mining strategist at Hallgarten & Company about the demand and supply gap in the rare earths supply chain and about the key developments in the North American rare earths space.

In this InvestorIntel interview, Christopher went on to say that there are not enough players in the market to produce sufficient rare earths for the electric vehicle transformation. Jack further added that the only country self-sufficient in critical rare earths is China and explained why the US still lags far behind while Europe has already acknowledged the need for rare earths.

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# Biden, the Chinese raw material hunt and the 'massive' monazite results of Appia Rare Earths & Uranium

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While the Biden Administration fixates on solving the port problem in the United States, China continues to dominate the Western world's supplies of, when it comes to the bigger picture, critical metals and materials. Literally, at the same time the US government is trying to focus on the issues right in front of it that may disrupt Christmas (*heaven forbid*), Chinese companies continue to seek out and lock up more of the raw materials that will [drive the future](#). In just the last few days, Zijin Mining Group Co., Ltd. launched a [C\\$960 million takeover bid](#) for Canadian domiciled [Neo Lithium Corp.](#) (TSXV: NLC | OTCQX: NTTHF), while Contemporary Amperex Technology Co. Limited (CATL), the world's largest battery supplier and ironically already part owner of Neo Lithium, signed a battery supply deal with U.S. commercial EV maker, Electric Last Mile Solutions Inc. (NASDAQ: ELMS). Three weeks ago CATL made a C\$377 million takeover bid for Canada's Millennial Lithium Corp. (TSXV: ML). Zijin is no stranger to taking out Canadian mining companies having previously acquired Nevsun Resources (C\$1.86 billion), Guyana Goldfields (C\$323 million), and Continental Gold (C\$1.4 billion), and those were just some of its Canadian targets.

From an investor's perspective, I guess this takeover activity can be viewed as a good thing given that these Chinese entities are [paying full value for their acquisitions](#). So you get your liquidity event and hopefully have made money to go off and find

the next possible target. But it is disappointing to see the West talk the talk about our greener future but not walk the walk as our leaders appear to be completely oblivious as to how we'll get there if we let China control all the raw materials. I will save that rant for another day. In the meantime let's have a look at a company that could tick the boxes for a potential acquisition by the Chinese.

Of late it seems the flavour of the day is lithium but that isn't the only critical material out there. The Chinese have long since cornered the market for rare earths but if no one is willing to stop them, or even slow them down, then why wouldn't they continue to acquire everything the world will let them. One Canadian junior mining company that could fit the bill is [Appia Rare Earths & Uranium Corp.](#) (CSE: API | OTCQB: APAAF), or perhaps you know it by its [former name Appia Energy Corp.](#) but that was so yesterday (today is literally the first day trading under its new name). Appia is a Canadian publicly-listed company in the uranium and rare earth element sectors and is currently in its largest exploration and diamond drilling program in the Company's history, focusing on delineating high grade critical rare earth elements, gallium, and uranium on its 100% owned [Alces Lake property](#), as well as exploring for high-grade uranium, in the prolific Athabasca Basin, on its [Loranger](#), [North Wollaston](#), and [Eastside](#) properties. Appia has found some of the highest grade samples of neodymium rich monazite on its properties in Saskatchewan.

The Alces Lake discovery of an accessible extensive hard rock deposit of monazite is very important to the world's demand for magnet rare earths. This is because Appia's monazite is neodymium rich, which is the most desirable for the production of rare earth permanent magnets. Not only is it rich in neodymium (Nd) and praseodymium (Pr), but also contains 1% of xenotime, the best heavy rare earth bearing hard rock mineral.

The good news is that yesterday the Company [announced](#) it has discovered new and previously unknown occurrences of massive and semi-massive monazite in the Wilson North area of Alces Lake. A total of 27 drill holes (2,460 m) have been completed at the Wilson-Richard-Charles-Bell zones (WRCB), with at least 27 holes (2,360 m) remaining. In total the Company has completed 61 drill holes (4,575 m) including drilling at Biotite Lake (13 holes – 685 m), Danny (7 holes – 430 m) and Sweet Chili Heat (14 holes – 995 m) with monazite occurrences identified in each area. One drill continues to test the continuity and depth extent of the WRCB zones, while the other moves across the property, exploring new drill targets, named Diablo and Oldman River.



### [Source](#)

With assays pending for all 61 holes drilled to date in the 2021 program, it's certainly exciting times for Appia. The Wilson North 21-WRC-015 drill hole showed monazite mineralization over 8.85 m from 15.74 m – 24.59 m. As noted above, three other locations also saw monazite occurrences. If the grades in this season's drill holes match the world class grades previously announced things could get very interesting very quickly. The Company is well funded to complete this season's drilling with plans to [prepare an NI 43-101 report](#) following the conclusion of the current exploration program later this year. With 107.6 million shares outstanding, the current market cap for Appia stands at roughly \$82 million. That's chump change given what some of these Chinese companies are throwing around for quality assets.

Keep in mind that for the last few years China has been buying monazite concentrates, thrown off as residues from heavy mineral sands' mining, from all over the world including, until recently, from the USA! China bought 30,000 tonnes last year

from Rio Tinto in Southern Africa; and up to another 20,000 tons from Indonesia, Brazil. It is logical to assume that China would have a great interest in a higher grade neodymium rich monazite deposit than Lynas' Mt Weld especially since the Appia material has 1 percent xenotime, which is a higher grade of heavy rare earth rich, xenotime, than Lynas' deposits at Mt Weld.

Appia may be on the cusp of an exciting future.

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## **Rare earths directed Appia Energy embarking on a fully funded drilling program at Alces Lake**

written by InvestorNews | September 15, 2022

Rare earths companies are starting to gain attention as demand for the magnet [rare earths](#) in particular is forecast to boom this decade as we move further towards renewable energy and electric vehicles. The market for magnet Rare Earth Oxides (REO) is expected to increase [five-fold by 2030](#). Two key magnet metals, Neodymium (Nd) and Praseodymium (Pr) have seen their prices rise strongly in 2021 and notably again the past month after a recent dip.

**Neodymium (Nd) oxide and Praseodymium (Pr) oxide prices have spiked higher the past month**





Source: [Kitco](#)

One rare earth junior (Appia Energy) has 2nd highest average rare earth element (REE) grade in the world, at [16.65 wt% TREO](#), hosted in favorable monazite ore.

[Appia Energy Corp.](#) (CSE: API | OTCQB: APAAF) (“Appia”) is focused on rare earths at their 100% owned, 43,434 acre, Alces Lake Project in the Athabasca Basin area of northern Saskatchewan, Canada. They also have uranium prospects in the region as you can read [here](#).

### **Appia Energy’s project portfolio in Northern Saskatchewan, Canada**



#### **[Source](#)**

The Alces Lake project has ‘monazite ore’ containing valuable rare earths Neodymium (Nd), Praseodymium (Pr), Dysprosium (Dy), and Terbium (Tb). Exploration since 2017 has identified high-grade Total Rare Earth Oxide (TREO) with [up to 49 wt% TREO](#) (average grades of 16.65 wt% TREO and 3.85 wt% CREO) on or near surface. Less than 1% of the property has been explored with diamond drilling.

On July 15, 2021, Appia [announced](#) that they are now embarking on a [fully funded ~5-6,000m drilling campaign](#) at Alces Lake, which is as much drilling as they have ever drilled before at the Project. The first phase of ground geology and geophysics is completed and the drilling team is about to mobilize to the Alces Lake camp, where two drilling rigs and crews will be working 24/7 on this phase of the helicopter-supported diamond drilling program.

Alces Lake Project Manager, Nic Guest, [commented](#): “The quality of the data obtained in the first phase of ground exploration is excellent. Our understanding of the various occurrences across the property has grown and we have planned our drill program accordingly. Our first phase of 2021 drilling will give us new and important information.”

Appia President, Frederick Kozak, [stated](#): “Approximately 5,700 metres of drilling has been planned to test the near-surface and down-plunge extents of new and existing rare-earth targets. More than 4,000 metres will be dedicated to identifying the depth potential of the WRCB zone (cumulatively the Wilson-Richard-Charles-Bell discoveries) and help complete the understanding of this significant discovery.”

The Alces Lake Project has excellent local infrastructure including mills, power, labour, highway, air strips, and well established summer and winter access routes. Appia has even recently built [a winter camp site](#) to help with all year round operations.

### **Highlights of Appia Energy’s exciting Alces Lake Project**



Source: [Company presentation](#)

### **Closing remarks**

Appia is sitting on a super high grade REE monazite ore deposit at Alces Lake. A huge summer drilling campaign has just begun and will help the Company potentially build up a Resource estimate. Rare earths expert Jack Lifton has also [agreed to join the Appia team](#) as a Strategic Adviser.

Appia is currently trading on a market cap of C\$83 million after a recent stock price dip. For those who missed out on buying

Appia earlier, now looks to be a good time to take a second look. We will let you know the drill results as they come in during the following months. Stay tuned.

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# Appia Increases Bought Deal Financing as it Ramps Up Rare Earths Drill Program

written by InvestorNews | September 15, 2022

[Appia Energy Corp.](#) (CSE: API | OTCQB: APAAF) announced upsizing its previously announced [bought-deal financing](#) to \$5 million that it expects to close later this month.

Appia plans to use part of the proceeds on a multi-million dollar summer exploration program on its Alces Lake property, which includes at least 5,000 meters of drilling and property-wide geophysical work. It also aims to upgrade the camp for winter use and access to extend the drilling season.

Appia is a Canadian-based mineral exploration company targeting the rare earth element (REE) and uranium sectors. The Company is currently focusing on delineating REE and uranium targets on its Alces Lake property, and plans to change its name to Appia Rare Earths & Uranium Corp.

The Alces Lake property is located in the Athabasca Basin of northern Saskatchewan, almost 30 kilometers northeast of Uranium City, which is a major centre in the area with good infrastructure including hydroelectric power, an airstrip, and an ice road connection.

The REE assays are reported as Total Rare Earth Oxides (TREO) and the Alces Lake property hosts some of the highest REE grades in the world and the second-highest average grade at 16.65% TREO.



#### SOURCE:

### **Re-analyzing Previous Samples Confirm Gallium Mineralization**

Since 2016, Appia has been working on the Alces Lake project and focused on uranium and the critical rare earth elements (CREE) including neodymium (Nd), praseodymium (Pr), dysprosium (Dy), and terbium (Tb).

Recently, Appia re-analyzed some historical samples with high-grade rare earth oxide (REO) results to determine the extent of [gallium mineralization](#) over the property and the correlation between REO and gallium.

The results returned gallium concentrations ranging from 0.01% to 0.104%  $\text{Ga}_2\text{O}_3$  and a positive linear correlation between gallium and REO.

According to the Company, gallium is considered high-grade when the weight percentage  $\text{Ga}_2\text{O}_3$  is greater than 0.010% and the combination of the high-grade REO system and gallium gives it the potential of becoming a world-class asset for critical metals.

Frederick Kozak, Appia's President, commented, "The gallium concentrations on the Property are remarkable. Gallium was found in naturally occurring high-concentrations on the Property that far exceed current concentrations required for global production of gallium."

Gallium is primarily used in electronics, semiconductors, and light-emitting diodes (LEDs) as it is able to turn electricity into light.

In March, the current price of high-grade gallium metal (99.99%) was US\$376.71/kg compared to Nd at US\$105/kg, Pr at US\$74.95/kg, Dy at US\$424.95/kg, and Tb at US\$1,468.02/kg. Being able to recover gallium would increase the ore value to Appia.

### **Targeting Ore from Deposit in Next 24 Months**

Appia's Alces Lake property has the REE hosted in coarse-grained monazite that is exposed at the surface in high-grade outcrops, making it economic to extract.

Monazite processing for REE extraction has a long history of economic viability and was started in the 1950s at the Steenkampskraal Mine in South Africa.

The company is following a low capital pathway to initial production by focusing on the potential of bulk mining the surface mineralization akin to a gravel pit operation and believes it could start production as early as 2023.

Appia would then use gravity and magnetic separation to create a concentrate to ship to a third-party plant and extraction facility for further processing.



### **[SOURCE:](#)**

### **Leveraging SRC's Rare Earth Facility**

In August 2020, the Saskatchewan government announced C\$31 million in funding for a Rare Earths processing facility in Saskatoon that will be owned and operated by the [Saskatchewan Research Council](#) (SRC).

The SRC facility will be the first-of-its-kind in Canada and will establish an REE supply chain in Saskatchewan.

In February, Appia announced that [bench-scale monazite processing](#) and metallurgical testing had started at the SRC facility using sample materials from Appia's Alces Lake property and SRC's current Separation Pilot Plant.

The goal of the test is to process monazite-bearing rocks from the property to determine the ease of metallurgical processing and recovery of REE end products.

The testing results will be a factor in determining the economic viability of the project and are expected to take at least three months before a report is issued by SRC to Appia.

### **REE Solvent Extraction Process at the SRC Facility in Saskatoon, Saskatchewan**



#### **SOURCE:**

### **Shifting Towards a Green Economy**

North American and European economies are focused on developing more environmentally friendly ("green") economies by shifting to low-carbon power generation and renewable energy, including solar and wind, as well as the swing from fossil fuel to electric vehicles. REE play a critical role in these industries.

Last year, the governments of Ontario and Canada announced plans to each spend C\$295 million to help Ford upgrade its assembly plant in Oakville, Ontario to start making electric vehicles.

But it is not just the green economy that requires these metals, they are critical in specialized alloys and magnets for airplanes, computer and military systems, high-speed transit,

and satellites. A secure supply chain has become of strategic importance.

### **Governments Focusing on Critical Metals that Include REE**

According to the [Center for Strategic and International Studies](#), China produced approximately 85% of the world's rare earth oxides and 90% of rare earth metals, alloys, and permanent magnets in 2019. This dominance is a concern for other governments and businesses that want to ensure a stable supply of critical metals.

In 2018, the U.S. Secretary of the Interior published a list of 35 critical minerals or mineral material groups and voiced their concerns about their dependence on imports to meet the demand and supply chain risk due to the source concentration of just one or two countries.

The U.S. Defense Logistics Agency, a combat support agency in the U.S. Department of Defense that manages the global supply chain, currently stores 42 commodities, including chromium, cobalt, iridium, palladium, platinum, and zinc, with a current market value of over \$1.1 billion.

In March, the rare earth's and critical minerals sectors received another boost as the Canadian government unveiled its "[Critical Minerals](#)" list that included 31 minerals the government considers *"essential to Canada's economic security, required for Canada's transition to a low-carbon economy, and a sustainable source of critical minerals for our partners."*

The mineral list was comprised of base metals, battery metals, energy metals, and other elements, including aluminum, cobalt, copper, gallium, lithium, nickel, niobium, REE, uranium, and zinc.

The government of Canada wants Canadian mining to become a global leader and supplier of choice and plans to support Canadian critical mineral projects with policy development, coordinate international engagements, and strengthen research & development in the sector.

Canada's list reaffirms its alignment with the U.S. on its list of "Minerals Deemed Critical to U.S. National Security and the Economy" and Canada's commitment to a "critical minerals" cooperation agreement that was initiated in 2019 and currently in the working-group phase.

### **Final thoughts**

Appia's planned financing should strengthen its Balance Sheet and fund its exploration plans for 2021.

In addition, Appia is not a one-trick pony as it holds exploration rights to 656 square km (162,104 acres) in Saskatchewan, including the Alces Lake, Eastside, Loranger, and North Wollaston properties, and over 125 square km (31,000 acres) of prospective REE and uranium deposits in the Elliot Lake area of Ontario.

If you think it's time to add some REE exposure to your portfolio, Appia might be a candidate to add to your watchlist.

Appia closed yesterday at C\$0.65 with a Market Cap of C\$63.4 million.