

A scenic view of a river flowing over a rocky landscape with a dense forest in the background. The river is turbulent, with white water rapids cascading over dark, jagged rocks. The surrounding forest is lush and green, with tall trees lining the banks. The sky is a clear, bright blue.

Highland Critical Minerals

Church Project - Quetico District Lithium

November 2024

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Investor Highlights

High-grade lithium potential in Ontario's Quetico District: Church Project

Growing Lithium Demand Aligns with Regional Activity

Global lithium demand is projected to grow 30% CAGR through 2030, regional exploration and joint ventures are advancing Ontario as a key North American hub for battery metals.

Strategic Location in Ontario's Prolific Quetico Lithium District

Church Property is located in a lithium bearing part of the Canadian Shield, surrounded by high-grade lithium-bearing pegmatite projects, growing regional activity and existing infrastructure.

Strong Geological Potential

Initial exploration has identified high lithium concentrations (up to 1.18% Li_2O in outcrop samples), supported by geochemical and LIBS analyses confirming strong LCT pegmatite potential.

Neighboring Advancements Highlight Regional Opportunities

Proximity to projects like Green Technology Metals' Seymour Project and Georgia Lake (10.6 Mt at 0.88% Li_2O) reinforces the district's economic and strategic value.

Infrastructure Ready for Efficient Development

Located near Thunder Bay, with access to the Trans-Canada Highway, exploration facilities, and a skilled workforce.

Key Market Trends

Lithium demand expected to grow at a 30% CAGR through 2030

AI Data Center Demand is Driving Advancements in Battery Technology

The lithium-ion battery market is projected to reach 4.7 TWh by 2030, creating a 3,000T/year lithium supply gap.

Lithium has been highlighted by World Economic Forum as a Critical Mineral

The World Economic Forum and International Energy Agency warn of material shortages threatening global clean energy transitions.

Developed Nations are Increasing Focus on Sustainability Goals

Achieving net-zero goals will require \$3.5 trillion annually for green energy and \$2.1 trillion for mining infrastructure.

The Regionalization of Supply Chains are Gaining Momentum:

The U.S. Department of Energy has allocated \$1.5 billion for key transmission projects, backing the clean energy transition.

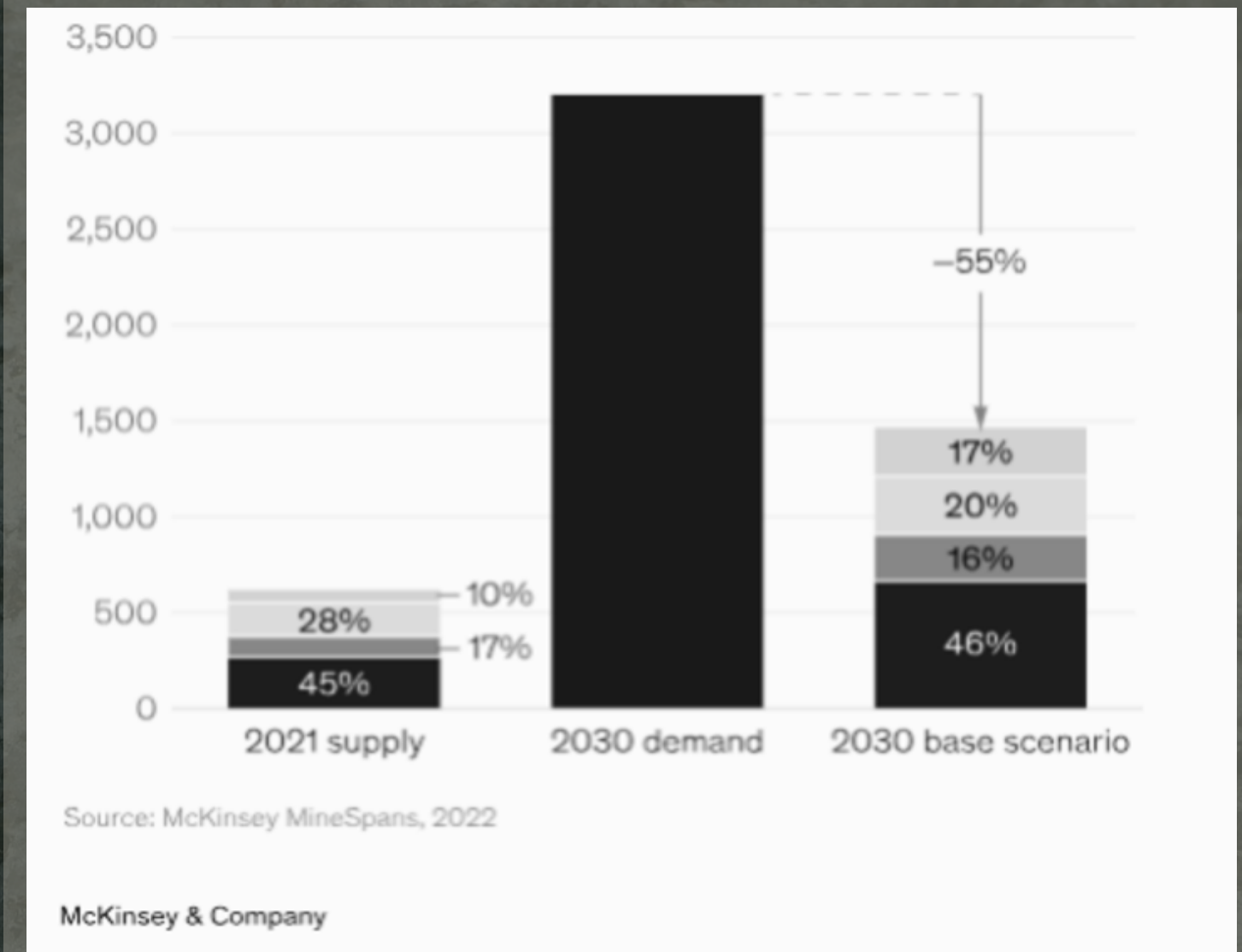
Clean Energy Transition is Dependant on a Reliable Supply of Lithium

Shortages in key materials like lithium threaten the clean energy transition, creating demand for more sustainable and secure supply chains.

Strong Support from vehicle OEMs Amid Resilient EV Demand

Top automakers are committing to a future of EVs and increasingly shifting to EV-only offerings

Supply Expected to Fall short of 2030 demand by 55%



Key Market Trends

IEA projects a 1,500% increase in lithium demand by 2050, key players are readying themselves accordingly

1



Strategic Joint Ventures

Frontier Lithium and Mitsubishi Corporation partner on the PAK Lithium Project, integrating mining and chemical conversion for North American EV supply chains.

Major Acquisitions

Rio Tinto strengthens its lithium portfolio with a \$6.7 billion acquisition of Arcadium Lithium, targeting energy transition opportunities.

Sustainability Partnerships

BYD collaborates with Lithium Australia to recycle lithium iron-phosphate batteries, advancing sustainable battery practices.

Gigafactory Development

23 new U.S. gigafactories under development to expand battery production and meet rising demand.

Industry Diversification

Key players like Exxon Mobil, Tesla, and General Motors enter lithium production to secure critical supply chains.

Global Investments

Mitsui invests \$30 million in Atlas Lithium, ensuring a stable supply of lithium concentrate from Brazil.

Quetico Lithium District

Favorable geology has driven renewed interest and exploration activity

Strategic Location:

Situated in Northwestern Ontario, Canada, Quetico is part of the prolific lithium-bearing region of the Canadian Shield

Proven Lithium Potential:

Known for its rich history of lithium discovery and ongoing exploration, the district holds significant lithium-bearing deposits

Geological Setting:

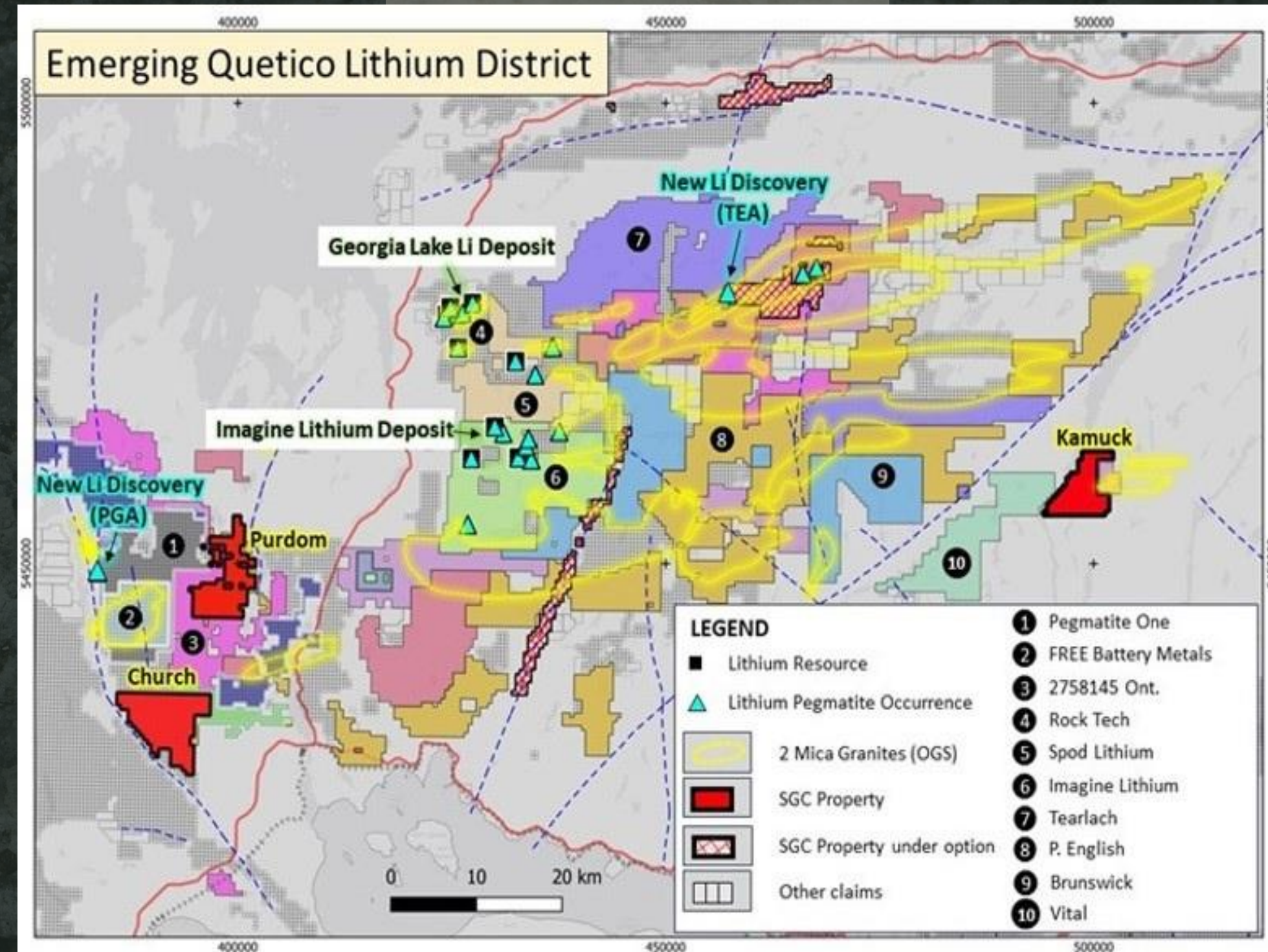
Underlain by favorable geological structures, including the Quetico subprovince, hosting some of the highest-grade lithium deposits globally

Exploration Advancements:

Recent exploration campaigns have identified high-quality lithium mineralization with further drilling planned


Access to Infrastructure:

Well-developed infrastructure, including roads, power, and nearby ports, enables efficient exploration, development and workforce



Quetico Lithium District


The district has attracted several ongoing exploration projects near the Church Property



Metal
ENERGY

SourceRock Project (Immediate West):


Lithium brine targets in the Proterozoic Sibley Basin, analogous to Chile's Salar de Atacama; historic drilling revealed significant saline flows and halite deposits.



VALOR RESOURCES

Frazer Lake Project (North):


Spodumene-bearing dyke assays up to 7.25% Li₂O, with detailed sampling revealing widths of 30–35 meters.



RockTech

Georgia Lake Project (Northeast):


Inferred resources of 10.6 Mt at 0.88% Li₂O; extensive exploration completed, including over 27,000 meters of drilling.



IMAGiNE
LITHIUM

Jackpot Project (Northeast):

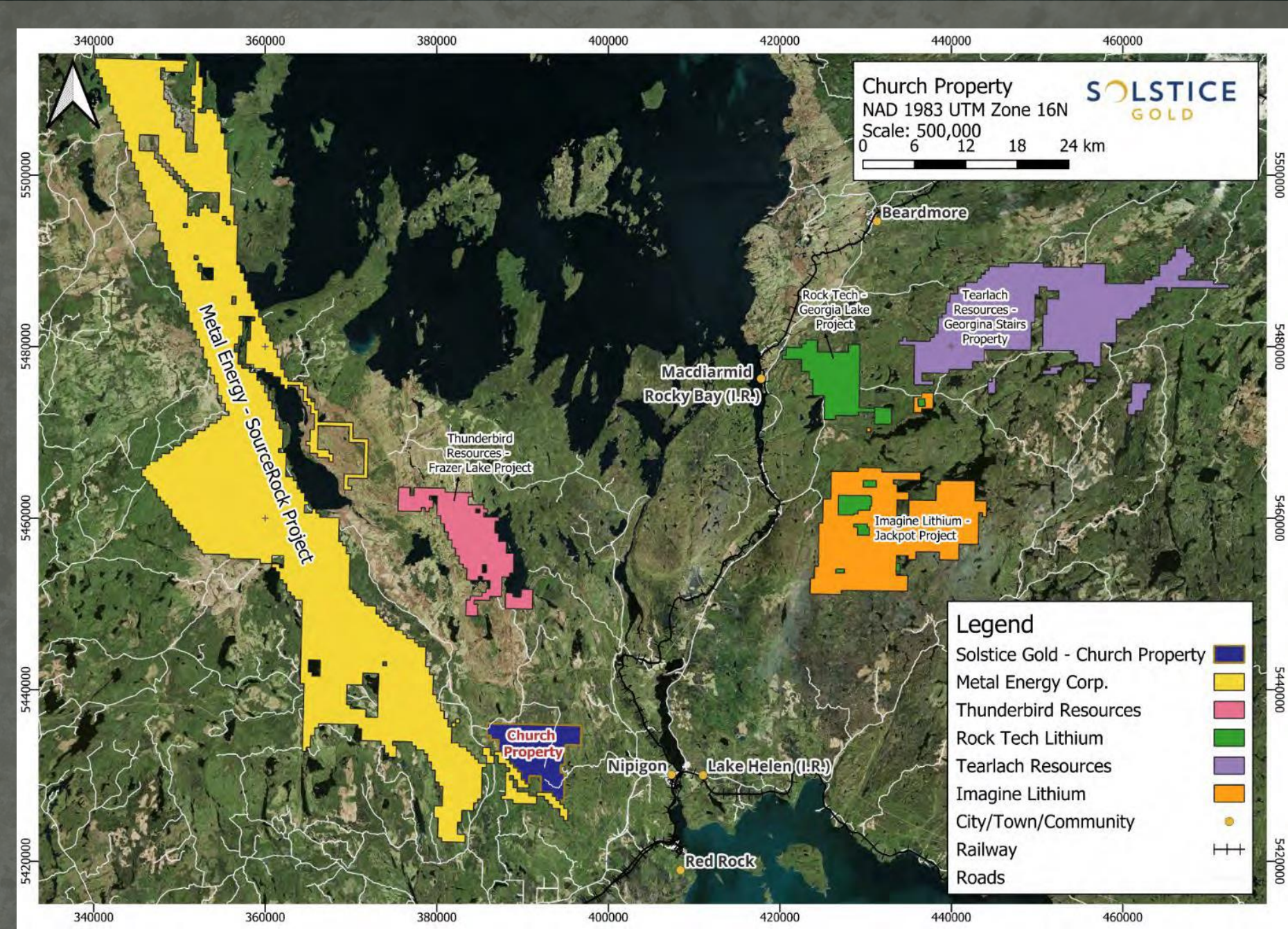
Combined resources of 8.4 Mt at ~0.9% Li₂O; drilling to expand historical resources and identify new targets.



TEARLACH

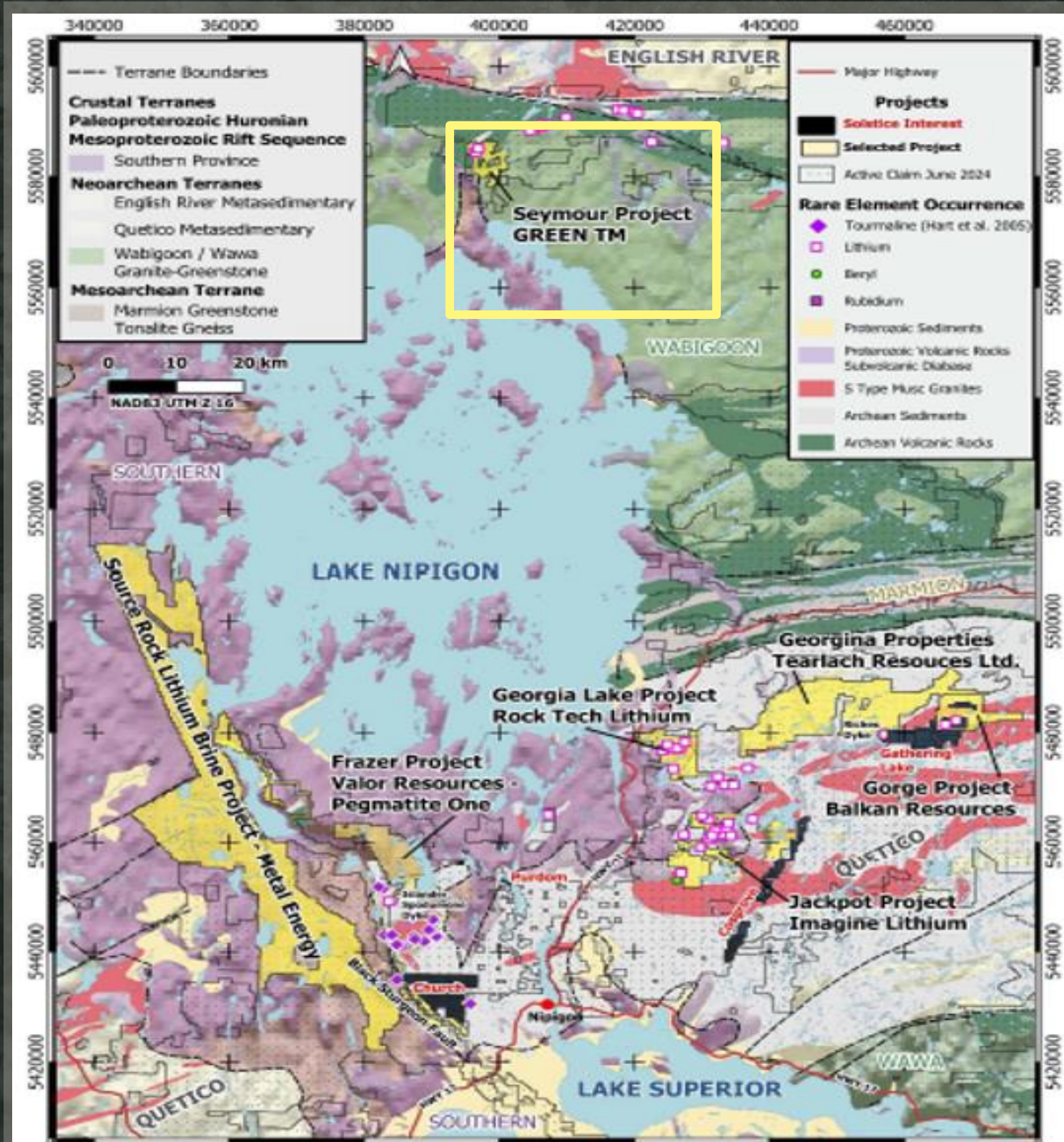
Georgina Stairs Property (Northeast):

Discovery of spodumene-rich pegmatites, with assays up to 6.48% Li₂O, signaling high lithium potential.



Quetico Lithium District

Green Technology Metals (ASX: GT1) is advancing the C\$1.8 billion Seymour lithium project, Ontario's first battery metal mine, targeting production in 2026



Ontario's First Battery Metal Mine

The Seymour project is a C\$1.8 billion initiative targeting production in 2026 to establish Ontario as a key player in North America's lithium market.

- The project is expecting an after-tax NPV of C\$1.2 billion and an IRR of 54%
- Average annual production of 207,000 tonnes of spodumene concentrate at a competitive cost of C\$985/tonne.
- Development includes a phased investment plan with an optional lithium hydroxide converter, increasing potential NPV to C\$1.5 billion.

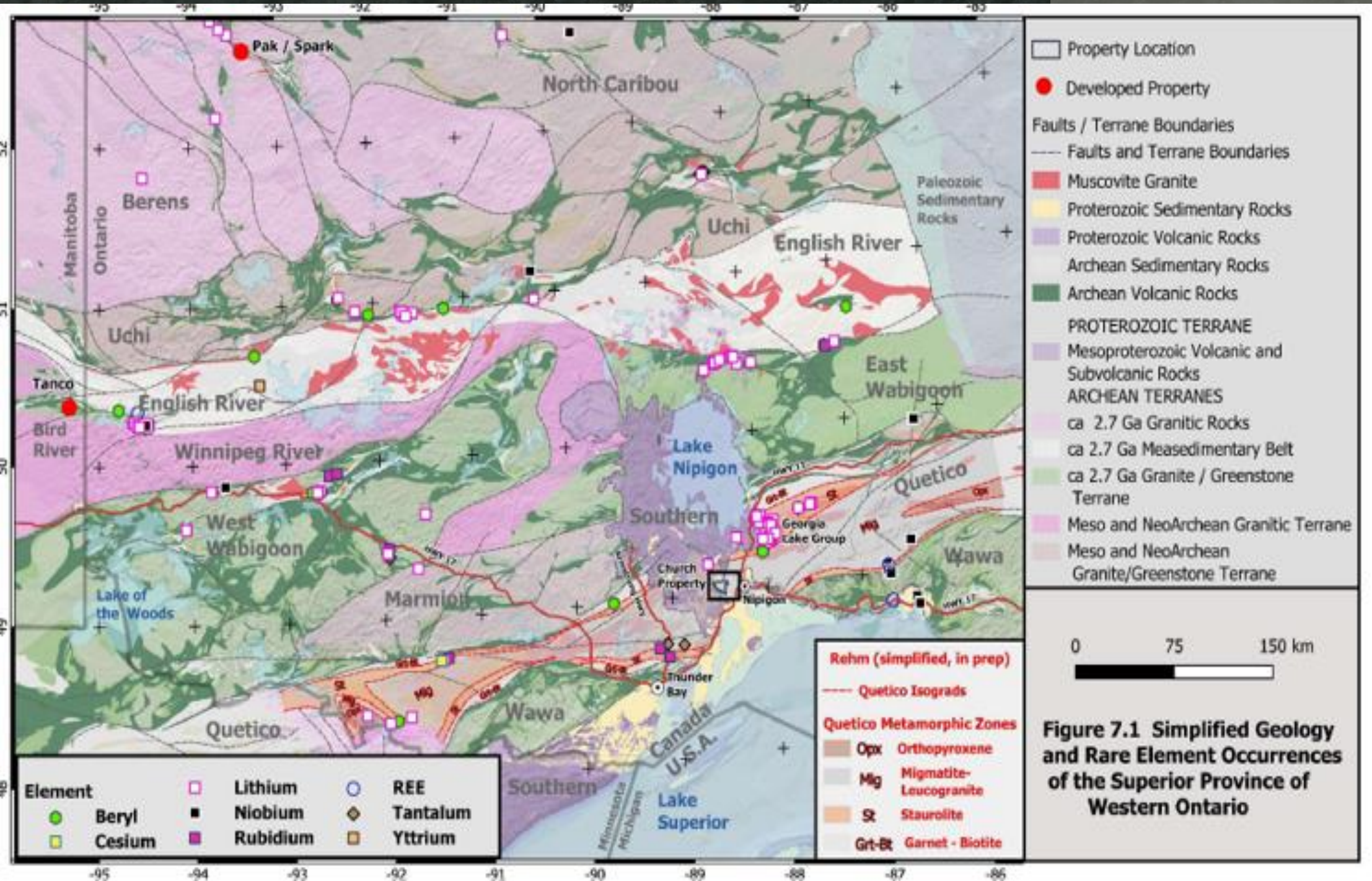
Strategic Resource Base

The project addresses a critical supply gap for lithium chemicals currently unavailable in North America.

- Seymour contains 10.3M tonnes grading 1.03% Li_2O
- Nearby Root deposit adding 14.6M tonnes at 1.21% Li_2O for future scalability.
- Staged investment requires C\$282M in Phase 1, with the final leg scaling the total to C\$1.8 billion.

Regional Geology

The Quetico region's metamorphic zones are rich in lithium occurrences



Regional Tectonics:

The Quetico subprovince features polydeformed migmatized greywacke deposited ~2697 Ma, coinciding with the collision between the Wabigoon and Wawa subprovinces

Granite-Greenstone Terranes:

The area includes terranes like Wabigoon and Marmion, with volcanic rocks from ~2.7 Ga

Metasedimentary Terranes:

Quetico and English River, low in volcanic rocks, date back to ~2.7 Ga

Pegmatite Potential:

Granite pegmatites with rare elements (Li, Ta, Cs) are common; some are highly fractionated (e.g. Tanco deposit, Bird River)

S-Type Granites:

Peraluminous granites, found in Quetico and English River, are associated with rare-element mineralized pegmatites

Mapping Updates:

Recent studies highlight increased grade of metamorphism in Quetico, indicating higher mineral potential

Church Project : Geology

Property remains underexplored, further detailed mapping will unlock its full rare-element mineralization potential.

Deformation and Metamorphism

Multiple deformation events accompanied by high-pressure metamorphism (~2.66 Ga), leading to granulite facies and widespread granitic magmatism

Lithological Composition

The oldest rocks are Archean migmatitic greywacke, enriched with biotite, quartz, plagioclase, garnet and granitic leucosome segregations

Granitic and Pegmatitic Units

Dominated by S-type muscovite granites, albite granitic bodies and pegmatites with potential rare-element mineralization

Rare-Element Potential

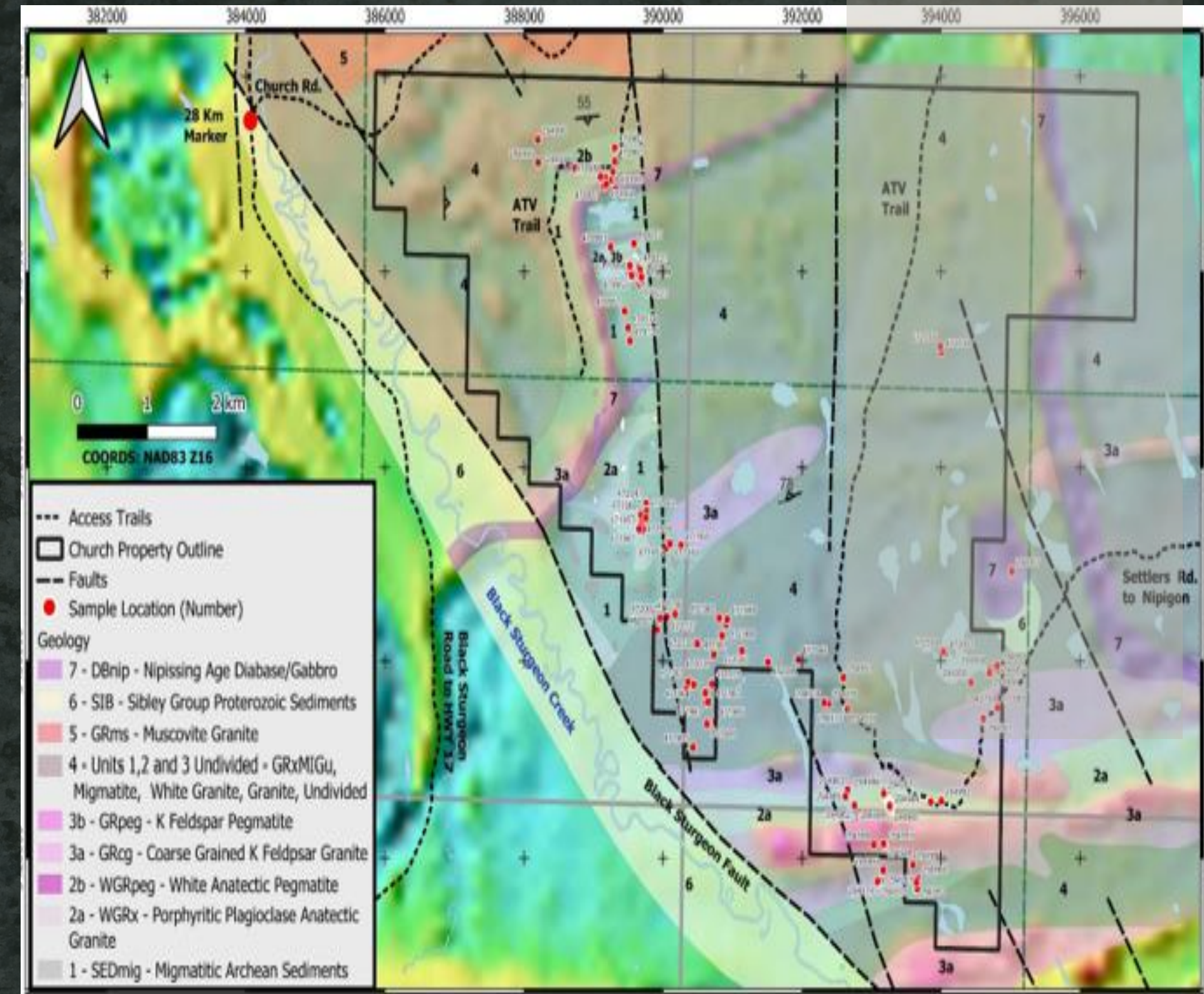
White albite granitic bodies and pegmatites exhibit potential for lithium and other rare elements, requiring further prospecting

Magnetic and Structural Features

Weak to moderate magnetic anomalies correspond to pink weathering granitic rocks, pegmatitic potassium feldspar phases, and Proterozoic sills

Spodumene Association

Nearby spodumene occurrences associated with albite and potassium feldspar granitic bodies, highlighting potential for rare-element exploration



Church Project : Mineralization

The Church Property exhibits geological and geochemical evidence suggesting high potential to host rare element pegmatites

Lithium Potential:

High lithium concentrations in feldspar and quartz grains provide surface indications of LCT pegmatite potential

Geochemical Indicators:

Whole rock geochemistry and LIBS data indicate fractionation trends important for identifying pegmatites with rare elements

Sample Collection:

113 outcrop samples (1-2 kg each) collected in 2023

Key Findings:

K/Rb ratios and (Mg+Fe) values help distinguish fractionated rocks and potential LCT mineralization, with low Fe+Mg correlating to leucocratic, muscovite-bearing pegmatites

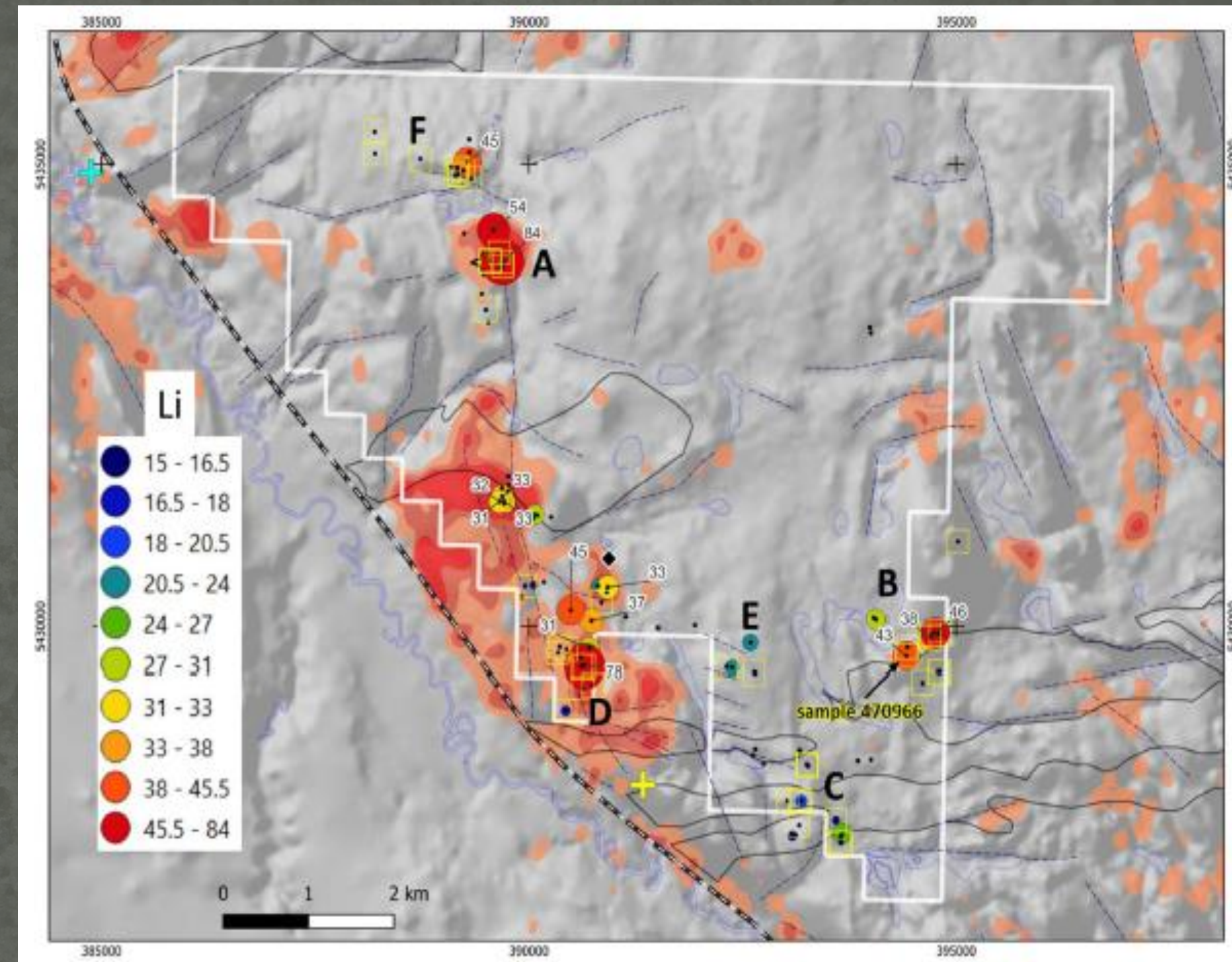
Geochemical Analysis:

Samples analyzed at ActLabs using Method UT-7, covering 55 elements, including Li and Rb, with detection levels from 15ppm to 50,000ppm

LIBS Technology:

Field analyses using the LIBS Z-903 analyzer for semi-quantitative spectral data, focusing on lithium and rare elements in feldspar and quartz

Lithium in CP samples greater than detection limit (15ppm)





Church Project : Infrastructure

Leveraging established accessibility and regional infrastructure

Physiography and Terrain

Elevation Range: 220m (west) to 500m (east) on Moseau Mountain

Notable Geological Feature: Black Sturgeon River Fault, marked by a valley and cliffs

Terrain Characteristics: Steep cliffs in the west, moderate central elevation changes

Geological Interest: Nippissing diabase sills from cliff faces, indicating structural activity

Accessibility and Resources

Location: North shore of Lake Superior, near Nipigon, Ontario

Proximity to Major Transport: 10km from the Trans-Canada Highway

Nearby City: Nipigon with population of 1,500; Thunder Bay 100km southwest

Services: Full range of exploration and geophysical service providers in Thunder Bay

Infrastructure

Trail Conditions: Accessible; historical logging trails viewable from satellite imagery

On-site Infrastructure: Created with portable facilities needed for exploration

Church Project : Historical Exploration

Preliminary exploration conducted in August 2023 suggest significant lithium potential at Church Property

Discovery:

Five pegmatites (12-30m wide) found at Church, with quartz, feldspar and muscovite

Lithium Values:

High lithium in alkali feldspars (50-280 ppm); up to 1.18% Li₂O in Church and 3.0% Li₂O at Kamuck

Radiometric Anomalies:

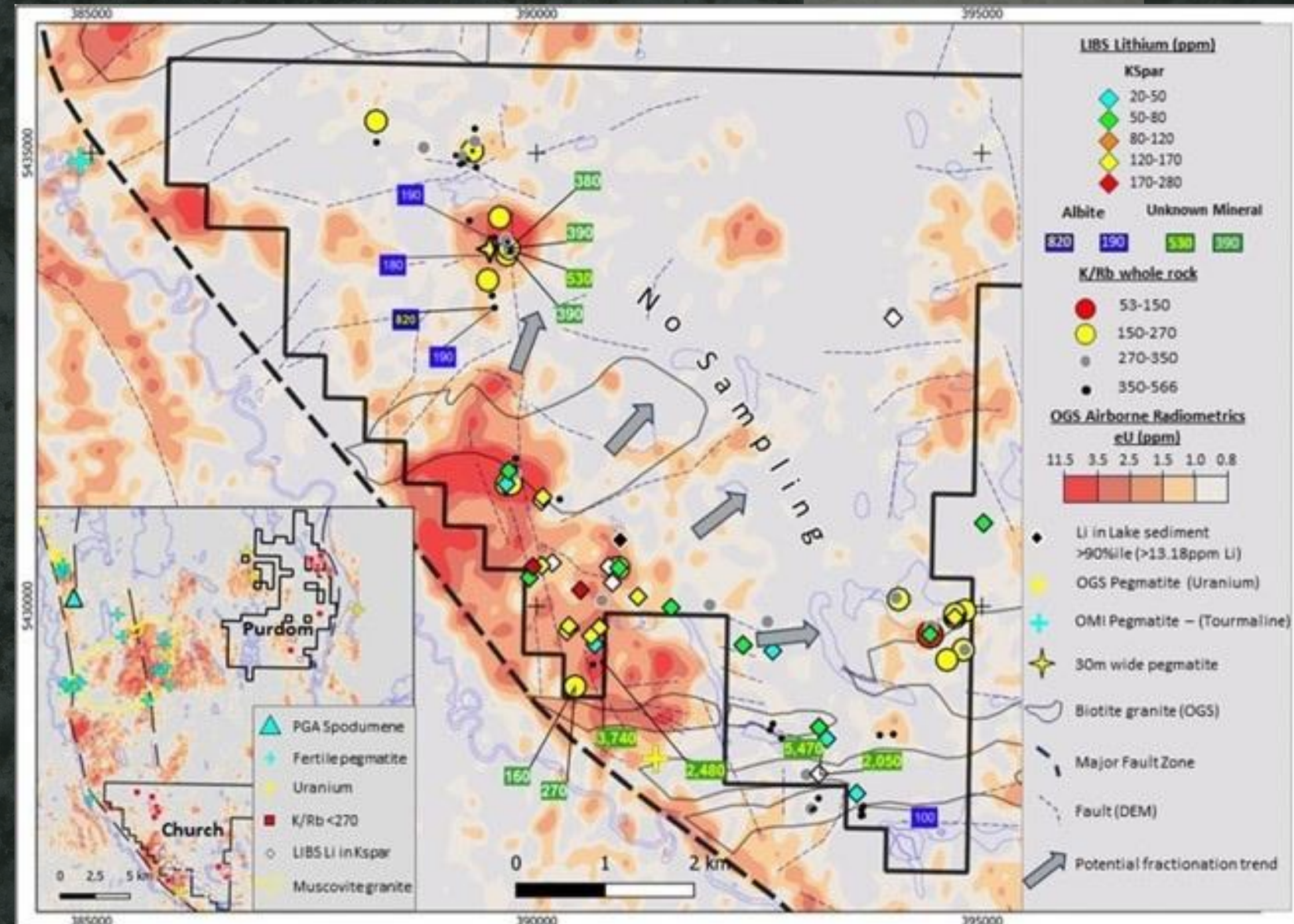
Strong radiometric anomalies correlate with lithium enrichment and nearby spodumene occurrences

Geochemical Data:

LIBS analysis confirms lithium enrichment, indicating potential for LCT pegmatites

Indicative Next Steps:

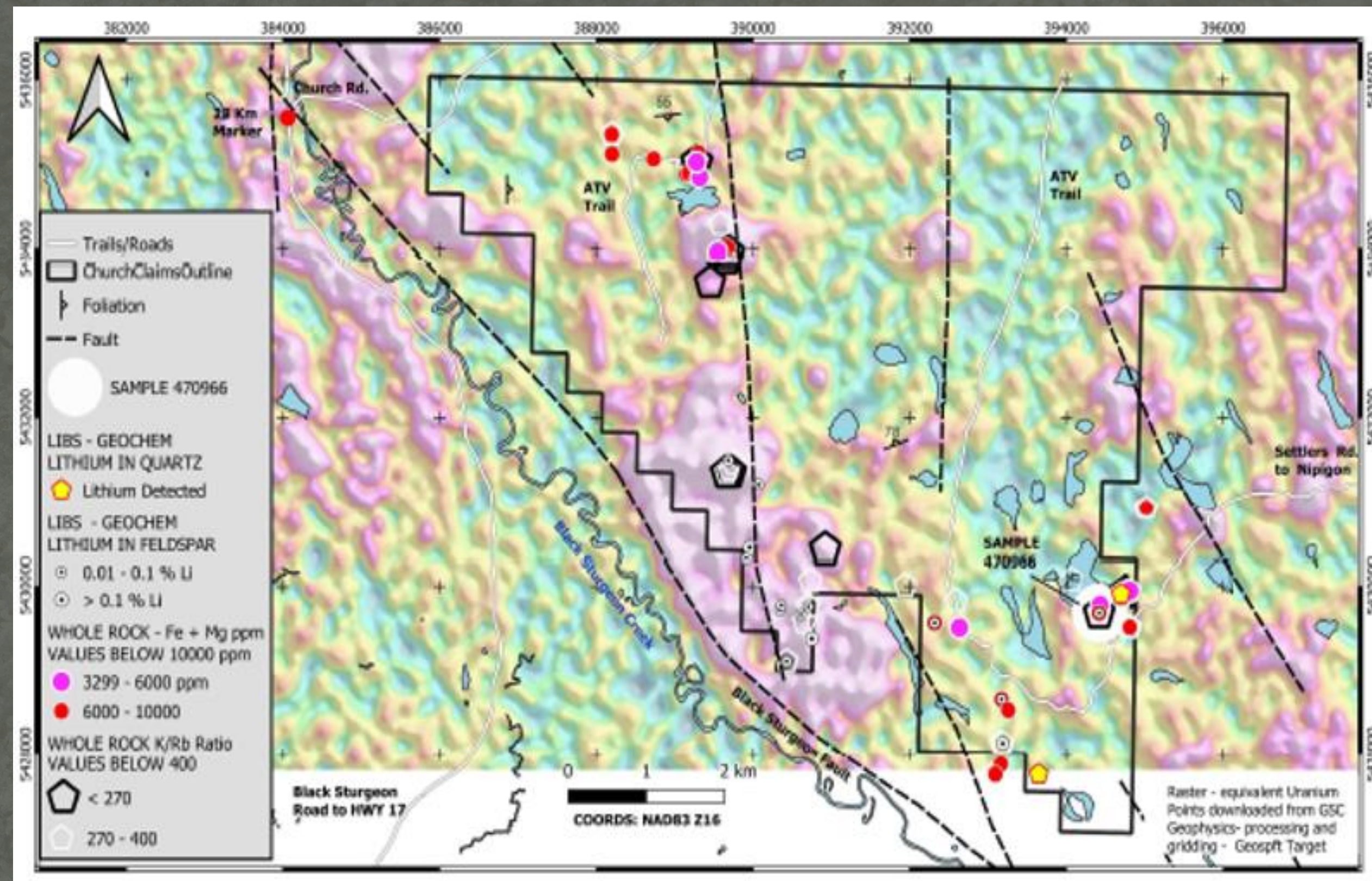
Expand prospecting and sampling over unexamined areas, with focus on eU anomalies and fractionation trends



Further Exploration

The Church Property exhibits geological and geochemical evidence supporting an exploration program to validate high potential hosting of rare element pegmatites.

Recent new spudomene discoveries on nearby properties along with advanced properties within the Georgia Lake pegmatite district undergoing production evaluations, attest to the high potential of the area.



Summary of some lct pegmatite geochemical indicators as exploration targets