AIRBORNE GEOPHYSICAL INTERPRETATION MEMO

Sheep Creek

Ravalli County, Montana

US Critical Materials Corp.

Precision GeoSurveys Inc.

BC Permit to Practice 1002615

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Sheep Creek Rare Earth Project

T4S R22W
Ravalli County, Montana

US Critical Materials
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SUMMARY

Rare earth and associated critical element mineralization on the Sheep Creek property occur in carbonatite dikes in Precambrian high grade gneisses and schists in what could be a unique geologic setting for North America. Much of the property is covered by overburden and when combined with the fact that the carbonatites and their envelope of fenitized host rock weather recessively makes direct exploration challenging. To address this issue, US Critical Materials commissioned Precision GeoSurveys, Langley, British Columbia, to conduct an aeromagnetic – radiometric survey over the property during the summer of 2023 for the purpose of identifying concealed mineralization and structural components and trends that influence mineralization. This report is an interim review of the geophysical findings that will help direct on-going exploration with refinements to follow as additional on the ground geological work progresses.

PROPERTY AND OWNERSHIP

The Sheep Creek property is located in T4S R22W, Ravalli County, southwestern Montana (Figure 1). The property is comprised of 336 lode claims for approximately 6,500 acres, or 10 square miles, all held by U.S. Critical Materials, Salt Lake City, Utah. The claims are on multiple-use ground administered by the US Forest Service out of the West Fork Ranger Station near Darby, Montana.

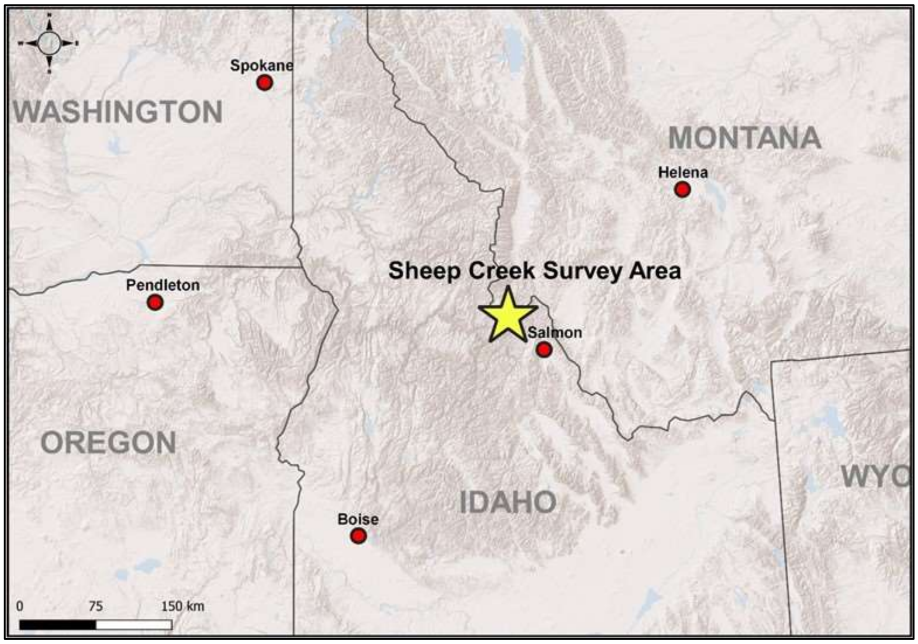

Figure 1: Sheep Creek survey location.

PROPERTY GEOLOGY

The Sheep Creek property is underlain by amphibolite-grade gneiss and schist that occur in a north-verging thrust sheet that overrides metamorphic rocks of varying provenance. Principal lithologies include an intrusion of diorite to gabbro composition and granitic rocks now represented by augen gneiss and quartz-feldspar gneiss. The diorite unit occupies the majority of the property and is locally interlayered with augen gneiss on a scale of tens of feet. Published mapping for southwestern Montana and adjacent parts of Idaho is reconnaissance-level only and additional mapping is necessary for regional correlations.

Mineralization on the property occurs in a series of carbonatite dikes three to ten feet wide that occur in structurally complex shear zones that show repetitive episodic movement. As currently exposed, individual dikes can be followed along strike for up to 700 feet and at least 400 feet along dip. The dikes are valuable for their high grades of light rare earth elements including neodymium and praseodymium (up to 2% combined Nd and Pr, and up to 10% total rare earths), and also contain significant amounts of niobium (1000 ppm), strontium (up to 4%), and gallium (300 ppm). Principle rare earth-bearing minerals include ancylite, bastnaesite, allanite, and monazite.

Diorite is the preferred host lithology for the carbonatites. It is fenitized, sheared, and altered to friable biotite schist adjacent to the carbonatites and therefore weathers in negative relief so that most carbonatites tend to occur in saddles, draws, or along other topographic breaks. The orientation of the shears zones generally aligns with a district-wide northwest-southeast metamorphic foliation that dips to the northeast and is recognized in the geophysics. Recent age-dating of the carbonatites suggests emplacement between 140 and 110 million years.

The concentration of carbonatite dikes in a relatively restricted area suggests the possibility of an underlying common source and the probability of additional undiscovered carbonatites. Concealed mineralization could take the form of a circular carbonatite stock, a sill-like laccolith intrusion that exploits foliation, or dikes with lateral and vertical continuity that could be mined from underground headings. The carbonatites contain few magnetic minerals compared to host rocks and could show as negative anomalies in magnetic studies. They also contain low amounts of thorium and therefore have a limited radiometric signature.

GEOPHYSICAL SURVEY

The block is approximately 8 km by 7.45 km in size, covering a total area of 59.5 km^2. The survey was flown with 100 m line spacing on the survey lines at a heading of 044°/224°, and with 1000 m line spacing on the tie lines at a heading of 134°/314°. A total of 658 line km of high resolution magnetic and radiometric data were collected by helicopter.

The geodetic system used for the geophysical survey was WGS 84/UTM Zone 11N.

Location data were collected with a Hemisphere R330 GPS receiver with a sample rate of 10 Hz. Magnetic data were collected using a Scintrex CS-3 cesium vapor magnetometer at a sample rate of 20 Hz, and radiometric data were collected using an AGRS-5 spectrometer containing 21.0 liters of NaI (Tl) synthetic crystals with a sample rate of 1 Hz.

INTERPRETATION PROCEDURES

There were two primary goals in the interpretation of the Sheep Creek survey block data:

- To identify targets that correspond to a pattern as described by the client.
- To identify geological structure as it relates to the magnetic and radiometric data.

To identify targets that followed a pattern as described by the client, the following steps were taken:

- Magnetic data, radiometric data, and topography were gridded and plotted onto maps in Geosoft.
- Historical geology was used to identify correlations in geology between potential target areas.
- Identification of zones with similar magnetic signature, orientation, and geologic setting.

The interpretation of the subsurface structure was performed using the following procedure:

- The vertical magnetic gradient (CVG) and the horizontal magnetic gradient (CHG) were calculated from the reduced to magnetic pole (RTP).
- Preliminary structures were identified based on the RTP and the derivative data (CVG & CHG).
- An upward continuation filter and a downward continuation filter were performed on the RTP data.
- Interpretation of structure and features were compared to the various grids produced by the different data processing steps.
- Radiometric data were overlain to compare and determine any correlation.

Final maps were produced showing the various magnetic and radiometric grids with the interpreted targets and structure overlain.

GEOPHYSICAL INTERPRETATION OBSERVATIONS

The geophysical interpretation identified 3 primary domains with sub-structure (orange outlines in figure 2). The strike of the substructures are approximately 235 degrees, and the thickness and density of substructures are very similar for all three domains. This would indicate that the cause of the secondary structures in both are contemporaneous and have a shared origin. Most of the structures appear to be very narrow and have the appearance of a dyke swarm. Rock chip samples with high amounts of REEs in analyses occur along the margin between the magnetic highs and the magnetic lows. Adits 1, 2, and 3 all occur at the margin between the magnetic highs and magnetic lows. In addition, high value samples appear to occur in areas with relatively low radiometric signal.

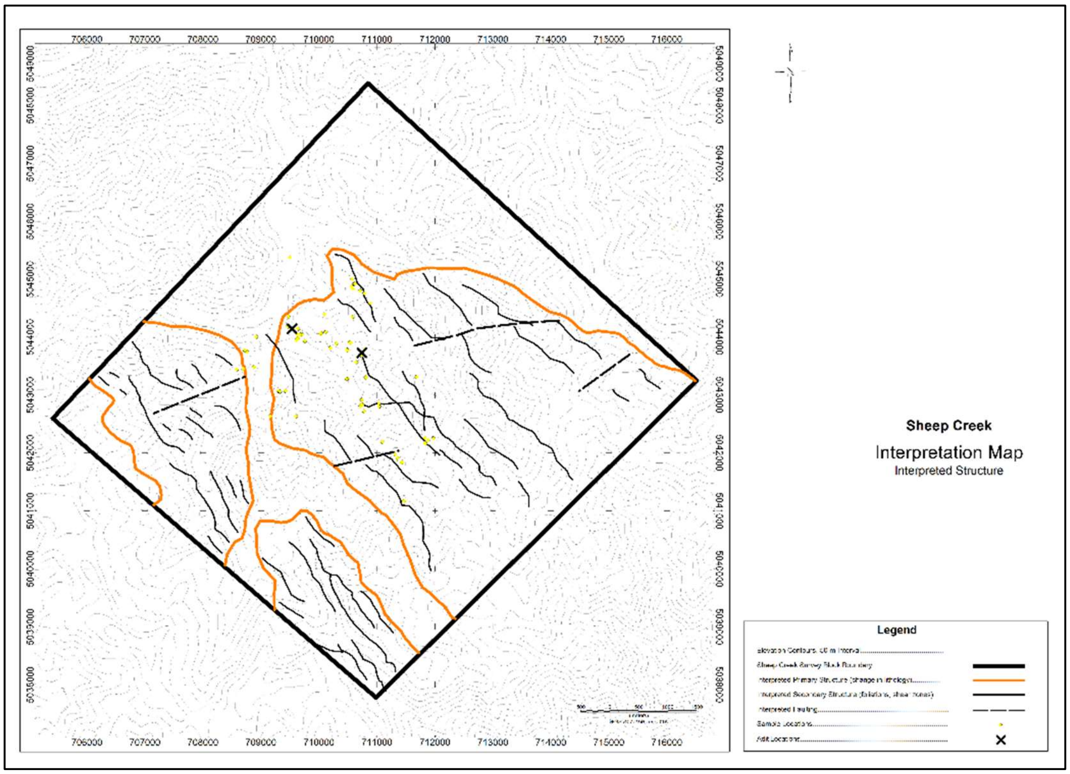

Figure 2: Interpreted structure of the Sheep Creek survey area.

GEOPHYSICAL INTERPRETATION RESULTS

The areas with the highest geochemical sample values appears to occur along the transition between the magnetic highs and magnetic lows. These areas are the boundary between the host rock with a higher magnetic signature and the lower magnetic intrusives which are believed to host the target mineralization.

From the images shown in the figures, there appears to be several unexplored areas that show similar magnetic features. Areas that may have the highest potential for future exploration fall adjacent to the magnetic highs and occur where the radiometric signal is decreased. Several areas that follow these criteria have been identified. They are identified in figures 3 to 5 as areas circled in red.

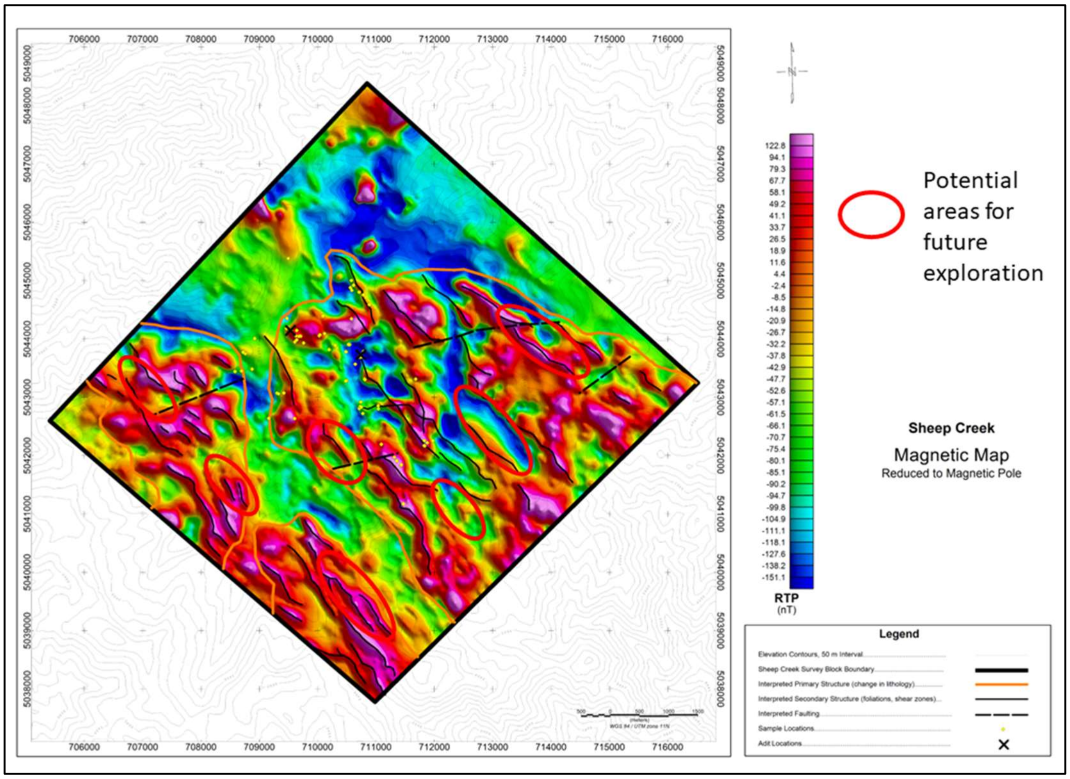

Figure 3: Reduced to magnetic pole with potential target areas.

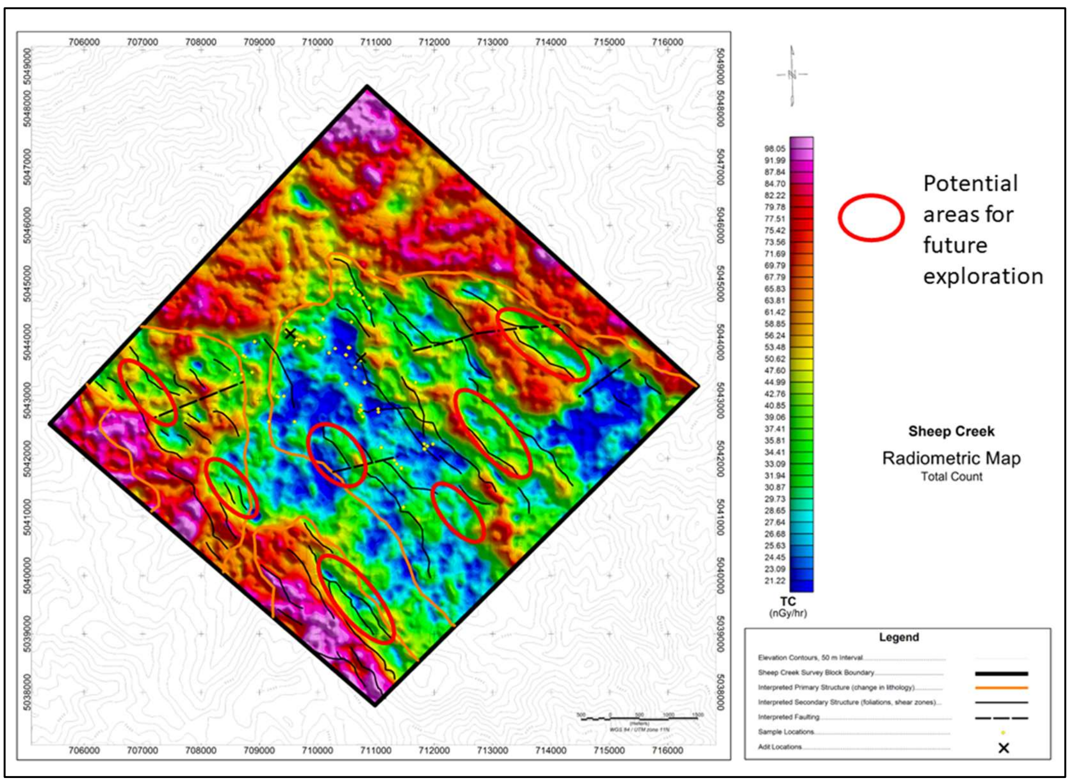

Figure 4: Total Count with potential target areas.

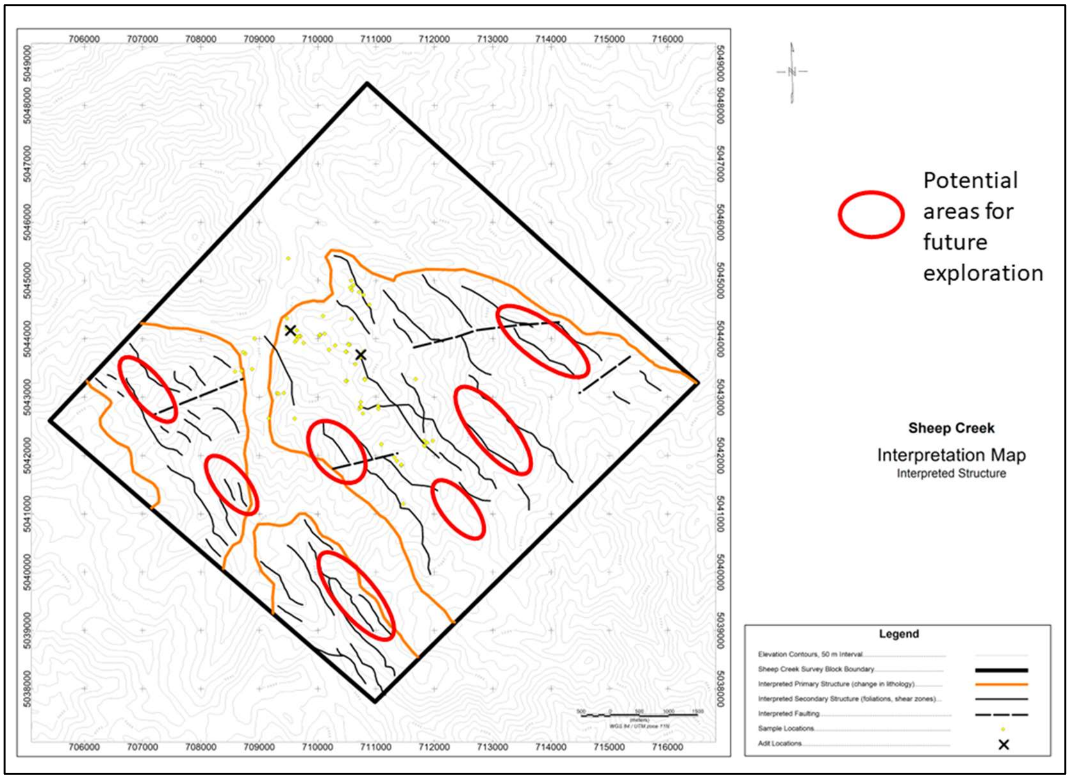

Figure 5: Potential target areas within the Sheep Creek survey area.

CONCLUSION

Carbonatites at Sheep Creek are valuable for their light rare earth content including neodymium and praseodymium, and also contain significant amounts of niobium, strontium, and gallium. The carbonatites show mineralization that indicate higher rare earth element content compared to surrounding rocks. Unlike many other rare earth deposits, Sheep Creek also contains low amounts of thorium and therefore has a limited radiometric signature, making the targets at Sheep Creek easier to identify.

Geology and geophysics indicate that the carbonatites extend down considerably and there is strong evidence that they connect at depth.

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Work Experience

Geoscientist, *October 2015 to Current*
Precision GeoSurveys Inc., Langley, BC

- Supervision of airborne geophysical surveys across North America. Surveys include Magnetic, Gradient Magnetic, Gamma Ray Spectrometry, and VLF – Electromagnetic surveys.
- Project management from initial meeting with clients and survey design to implementation and production of final datasets, maps, and reports.
- Integrate data from multiple sources to perform geophysical analysis, modeling and geological interpretation to guide exploration on a variety of economic and strategic targets.
- Field duties include data acquisition, initial processing, quality control and assurance, and the production of field maps.
- Supervising and mentoring junior geoscientists working toward their professional designation.
- Conference responsibilities include client interaction, preparation and delivery of conference presentation material.
- Additional duties include research and development of new survey applications and techniques, maintaining, installing, and repairing geophysical survey equipment on survey aircraft.

Formal Education

University of Alberta, Edmonton, AB, September 2004 – April 2008
- Master of Science in Geophysics.

University of Alberta, Edmonton, AB, September 2001 – April 2004
- Bachelor of Science, Specialization in Geology.