



US Critical Materials Corp.

Company Deck
March 2025

www.uscriticalmaterials.com



U S CRITICAL MATERIALS

Security of Supply

US Critical Materials is a privately owned, rare earths exploration, development, and critical mineral technology processing company.

The company holds a portfolio of a U.S. based rare-earth and critical mineral deposits encompassing approximately ten square miles in Montana and Idaho.

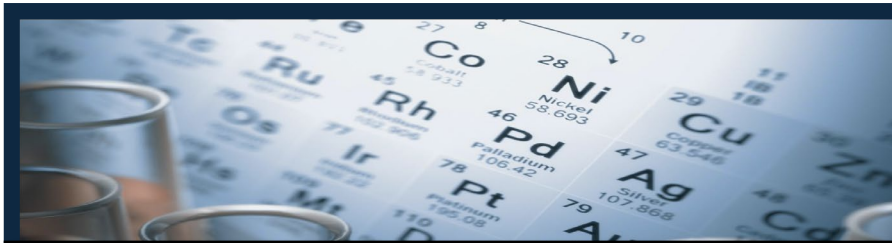
US Critical Materials Sheep Creek Property has some of the highest rare earths grades in the United States averaging 9% percent (90,000 parts per million) with some TREE as high as 20.1 % . The deposit contains at least fifteen of the “critical risk” minerals defined by the current administration, together with gallium, strontium, niobium, and scandium.

In December 2023, US Critical Materials entered into a Cooperative Research and Development Agreement (CRADA) with Idaho National Labs (INL) to develop cutting edge, environmentally sensitive technology for the separation of rare earths and other critical minerals vital to the United States.

On June 3rd, 2024, Idaho National Labs confirmed the presence of significant levels of high-grade gallium at Sheep Creek. Idaho National Labs is creating an environmentally responsible separation process for the gallium and the other critical minerals.

On February 1st 2025 US Critical Materials entered into a Phase 2 CRADA with INL which details a path forward to further develop the cutting-edge separation and processing technologies that are being developed for Sheep Creek critical minerals and rare earths.

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



Rare Earth Calculations from Samples Taken From the US Critical Materials' Sheep Creek Property and Analyzed at Idaho National Laboratory



134,515 ppm (parts per million) of TREE - 13.4% Total Rare Earths

187,480 ppm (parts per million) of TREE - 18.7% Total Rare Earths

138,199 ppm(parts per million) of TREE) - 13.8 % Total Rare Earths

177,849 ppm (parts per million) of TREE - 17.7 % Total Rare Earths

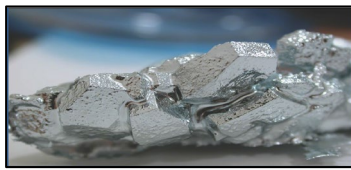
GALLIUM AS HIGH AS 350 PPM. CURRENTLY PROFITABLE

@ 50 PARTS PER MILLION

These gallium and rare earth numbers are higher than any that we are aware of in the United States.

US Critical Materials is currently working with Idaho National Laboratory on an environmentally responsible separation and processing system.

Gallium at Sheep Creek



Commercially recoverable gallium grades at Sheep Creek show on the surface, and in the adits 150-400 feet below ground.

The U.S. is 100% import dependent on gallium, coming mostly from China.

US Critical Materials is not aware of any other domestic companies that are pursuing gallium processing and separation with the goal of being a U.S. source of gallium.

US Critical Materials has high grades of gallium and will be working with Idaho National Labs to invent and perfect a process to separate the gallium from the Sheep Creek ore.

Gallium is one of the top supply risks to our national security and defense.

Gallium in the Media

Click the hyperlinks below to find out more

- ✿ **PR Newswire**
[US Critical Materials Corp. Announces Major Discovery of Gallium on their Sheep Creek, Montana Properties](#)
- ✿ **HuffPost**
[The U.S. May Have Just Scored A Win Against China In The Battle Over A Key Mineral](#)
- ✿ **Mining.com**
[US Critical Materials makes gallium discovery at Sheep Creek in Montana](#)
- ✿ **Global Mining Review**
[US Critical Materials announces major discovery of gallium](#)
- ✿ **Mining Technology**
[US Critical Materials discovers gallium deposit in Montana](#)
- ✿ **Semiconductor Today**
[US Critical Materials announces discovery of gallium at Sheep Creek, Montana](#)

GALLIUM SEPARATION AND PROCESSING METHOD



Electrochemical Extraction and Purification of Gallium and the full spectrum of rare earth critical minerals from Carbonatite Ore Leachate.

The US Critical Materials/ INL project targets extraction of >90% Ga and the full spectrum of rare earth critical minerals from carbonatite ore leachate through use of a novel Electrochemical Membrane Reactor (EMR).

The proposed recovery methodology overcomes technical barriers associated with state-of-the-art critical mineral extraction technologies including fractional precipitation and carbonation methods; commercial electrolysis methods (i.e., mercury usage); solvent extraction; and ion-exchange. The proposed EMR will use only electricity, water, and N₂ gas without need for other chemical reagents to recover REE's from the ore leachate. US Critical Materials will file national and international patents on these technologies.

The electrochemical method here is targeted at Ga, however the method is adaptable and useful for recovery of many value-add metals. Although Sheep Creek carbonatites are the target feedstock for this study, the EMR can be used on multiple critical mineral and material sources that have undergone chemical dissolution to form a metal-rich liquor.

Adits at Sheep Creek

In the 1960's Hecla Mining excavated 3 adits at Sheep Creek.

In 2023, two of these mine shafts were reopened, providing a glimpse of the property 150 - 400 feet beneath the surface.

The samples taken from within the adits were tested at Activation Laboratory. The results reflect economical below-surface mineralization at very high grades.



Strong mineralization, including gallium, was found in these tunnels, 150-400 feet below ground. US Critical Materials geologists entered the adits and sampled the rocks for analyses at Activation Laboratories.



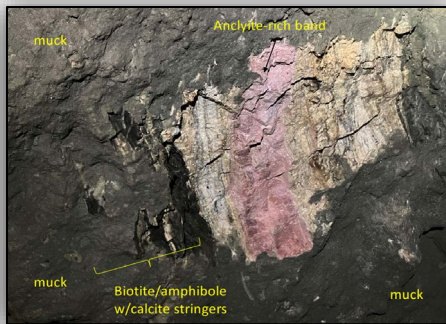
Sheep Creek Adit Photos



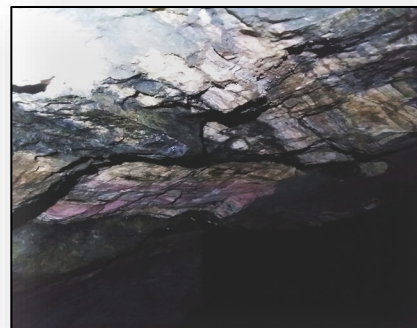
Ancylite Mineralization on right rib
in Sheep Creek Adit



US Critical Materials Chief
Geologist Peter Mejstrick
taking a dip measurement of
the exposed carbonatite.
Approximately 4 feet of vein.



Carbonatite with Allanite,
Columbite, and Monazite



Banded Carbonatite with
Ancylite

The TREE (Total Rare Earth Element) at Sheep Creek averages 9% and the mineralization is up to 10 feet wide, with highly mineralized carbonate dikes that go up to 5 feet wide.

Idaho National Lab tests Sheep Creek samples; one rock from Montana project contains 17.8% rare earths and 350 ppm* gallium.

-Metal Tech News, Shane Lasley, May 30th, 2024

Recent analysis by Idaho National Laboratories confirms that US Critical Materials Corp.'s Sheep Creek project hosts extremely high concentrations of gallium and high-grade rare earth elements.

“The gallium and rare earth grades, calculated and verified by Idaho National Laboratory, are higher than any that we are aware of in the United States.”

-US Critical Materials President Jim Hedrick

Both rare earths and gallium are highly critical to America's high-tech sector, as well as the nation's overall economic well-being and security.

The 15 rare earth elements found at Sheep Creek are essential for many high-tech applications, including electric vehicles, wind turbines, and military hardware.

Gallium is an important ingredient for semiconductors used in 5G communication technologies, smartphones, satellite systems, solar energy, and next-generation defense systems.



[Kingly rare earth grades at Sheep Creek](#)

[Metal Tech News](#)

“Assay lab results affirm high-grade nature of critical minerals deposit in SW Montana.”

“If "grade is king," then US Critical Materials Corp.'s Sheep Creek in Montana wears the crown when it comes to rare earth projects in the United States.

The mining sector mantra "grade is king" alludes to the idea that a mine capable of producing one kilogram of rare earths for every 11 tons of ore dug up will be more profitable and have a smaller environmental footprint than a mine that must move more than 500 tons of ore for the same kilogram of this suite of critical elements.”

“Recent testing by Activation Labs, a Canadian analytical laboratory renowned for its rare earth analysis, of 52 surface samples collected at Sheep Creek returned an average grade of 9% total rare earth oxides, with individual samples containing as much as 21.7% TREO.”

“In fact, the Sheep Creek samples collected so far are higher grade than most other global rare earth deposits, which tend to run from 0.1% to 4% TREO.” [–Shane Lasley](#)



“Not only is our gallium high grade, but we are also confident that working together with Idaho National Laboratory, we will be able to create a proprietary separation process that will be environmentally respectful.”

"Over the course of my 30+ year career evaluating properties for the U.S. Government, I have never encountered a deposit with the high rare earth and gallium grades being generated at Sheep Creek."

James Hedrick, President of US Critical Materials and former Rare Earths Commodity Specialist for the USGS



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