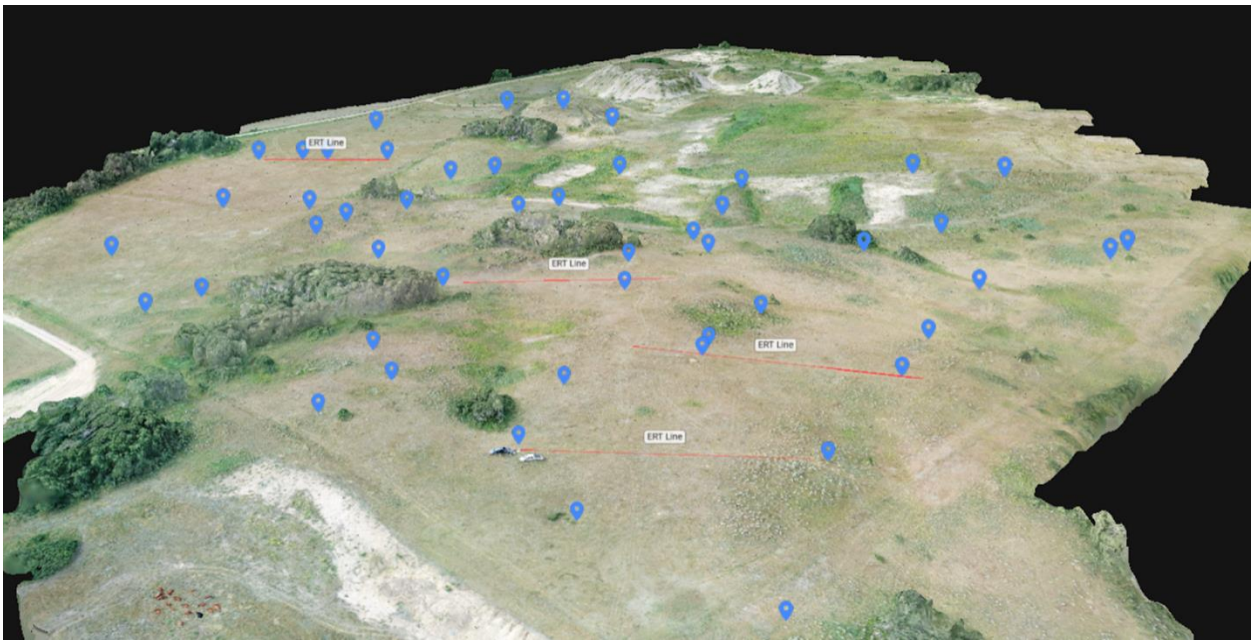
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A Resource Assessment Methodology for Shallow Critical Mineral Deposits: A Sand and Gravel Case Study

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Aggregates function as the foundational critical mineral; they are the literal bedrock of the energy supply systems. The massive scaling of wind, solar, and nuclear power and the continued development of oil and gas infrastructure depends entirely on a secure, localized supply of high-specification sand and gravel for both concrete and infrastructure development. The most desirable aggregate deposits are typically shallow, in close proximity to the end user and have favorable strip ratios. One of the highest economic risks associated with aggregate development is the geological variability of the deposit. Assessing aggregate deposits to reduce this risk has undergone significant evolution and can now be characterized as a multidisciplinary, multitechnology methodology.

The case study area comprises a thin, complex deposit situated in east-central Alberta. In this presentation we will highlight the respective contributions of a geologist, a geophysicist, and a mining engineer in establishing a robust and defensible estimation of in situ resource and stockpile product volumes. The integration of a near-forensic search for historical geological data with modern shallow geophysics and aerial surveying has produced a final product that allows all interested parties to make critical resource development decisions.



In this view of the case study area, many of the components of both the deposit and the tools used to assess it can be seen. Outcrops (pit faces), test pit locations, geophysical line locations and material stockpiles provide some of the data in determining the viability of a project.